ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 8, Issue, 11, pp.42292-42295, November, 2016

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

RESEARCH ARTICLE

KNOWLEDGE AND PRACTICE OF DERAYAN COMMUNITY TOWARDS SELF-CARE MANAGEMENT OF DIABETES: A DESCRIPTIVE CROSS-SECTIONAL STUDY FROM PAKISTAN

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ARTICLE INFO

Article History:
Received 14th August, 2016
Received in revised form
10th September, 2016
Accepted 17th October, 2016
Published online 30th November, 2016

Key words:

Derayan Community,
Diabetes,
Knowledge,
Practice,
Self-care management.

ABSTRACT

Introduction: For the management of diabetes pharmacological treatment alone will not produce excellent result. For proper control of fluctuating blood glucose level, every individual must be counseled on life style modifications, diet and exercise. To prevent diabetes complication, a patient must be aware of basic knowledge of diabetes.

Aim: The main objective of the present study was to evaluate the knowledge of diabetic patients residing in derayans community regarding diabetes, associated risk factors, complications and management.

Method: A descriptive cross-sectional study was used to evaluate knowledge of diabetic patients residing in derayans community regarding diabetes, associated risk factors, complications and management. A validated semi structured questionnaire was used for data collection from a sample of 70 diabetes patients conveniently selected from derayan community residing in Pakistan. After data collection, data was coded and analyzed statistically.

Results: The results showed that the most common diabetes complications observed among the derayan community were: protein urea (n = 11, 15.7 %), blurred vision (n = 30, 42.9 %) and heart diseases (n = 37, 52.9 %). The common action taken on finding blood glucose lower than normal was to do nothing (n = 26, 37.1 %). The most frequently eaten food item was: potatoes (n = 21, 30 %), rice (n = 22, 31.4 %) and fish (n = 11, 15.7 %). The most high carbohydrate diet considered was: potatoes (n = 30, 42.9 %) and dates (n = 34, 48.6 %).

Conclusion: The results of the present study concluded inadequate knowledge and poor self care diabetes management among the derayan community. Diabetes self-management educational programs must be designed for the community to equip them with basic information and management skills around diet, exercise, self-monitoring and medication use.

Citation: Mateen Abbas, Madeeha Malik, Azhar Hussain, Ayesha Hashmi and Muhammad Junaid Cheema, 2016. "Knowledge and practice of derayan community towards self-care management of diabetes: A descriptive cross-sectional study from Pakistan", *International Journal of Current Research*, 8, (11), 42292-42295.

INTRODUCTION

Diabetes mellitus is a complex set of metabolic disorders characterized by chronic hyperglycaemia and disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion, insulin action or both (Association, 2012). It has been estimated that 285 million people have diabetes in 2010, and about 70% of them are from developing countries (Chen *et al*., 2012). The World Health Organization has estimated that the number of people with diabetes globally, will be more than double over the next 25 years and the developing world would bear an increasingly larger burden of disease during this period (Danaei *et al*., 2011).

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Diabetes is the sixth leading cause of death from disease in the world. The long-term, relatively specific complications of diabetes mellitus are predominantly vascular and include the development of retinopathy, nephropathy and neuropathy. People with diabetes also have a significantly increased risk of cardiac, peripheral arterial and cerebrovascular disease (Ramachandran *et al*., 2010). The major types of diabetes are type 1, type 2 and gestational diabetes, though several other forms of diabetes exist and there appears to be an increasing proportion of atypical presentations of diabetes in some low- and middle-income countries (Zhang *et al*., 2010). Diabetes is a life threatening issue as its poor control lead to many complications. Many factors contribute towards uncontrolled diabetes i.e.; literacy rate, patient knowledge, patient attitude and beliefs, patient behavior in management of diabetes, non adherence to medications, lack of knowledge regarding standard treatment guidelines, lack of diabetes related education, life style, family history, dietary non restriction and

unavailability of specialized person in management of diabetes (Zimmet *et al*., 2014). Diabetes is largely self-managed, and successful models of care must focus on strategies that promote and maintain improved self-care behavior. Drugs are only part of the plan for managing type-II diabetes. Other interventions, such as patient education, modification of diet and promotion of exercise remain cornerstones for management of this chronic condition (Beaglehole *et al*., 2008). Accordingly, effective diabetes self-management training has been developed and the challenge now is to package, monitor, and consistently deliver these interventions effectively in a way that is practical in terms of the time and resources required for reaching the target population (Kessler and Glasgow, 2011).

The total prevalence of diabetes in Pakistan in 2011 was 12.9 million (10% of total population) out of which diagnosed were 9.4 million, undiagnosed are 3.5 million, pre-diabetics are 38 million people (20.5% women and 15.9% men diagnosed as pre-diabetics). It has been estimated that Pakistan is known as the 7th largest country in terms of highest prevalence of diabetes and it will be 4th largest by the year 2030 (Whiting *et al*., 2011). Literacy is directly associated with diabetes knowledge. Poor health literacy is common in patient with poor educational background and is considered as an important barrier in management of chronic diseases like diabetes (Al Sayah *et al*., 2013). Diabetes education is one of the most accurate ways to manage glycemic challenges now days. For the management of diabetes pharmacological treatment alone will not produce excellent result. For proper control of fluctuating blood glucose level, every individual must be counseled on life style modifications, diet and exercise (van der Heide *et al*., 2014). To prevent diabetes complication, a patient must be aware of basic knowledge of diabetes. Thus, the main objective of the present study was to evaluate the knowledge of diabetic patients residing in derayans community regarding diabetes, associated risk factors, complications and management.

MATERIALS AND METHDOS

A descriptive cross-sectional study design was used to evaluate knowledge of diabetic patients residing in derayans community regarding diabetes, associated risk factors, complications and management. National bioethical committee is present for this type of research and it states that only institutional head approval is required for this type of study. Beside this approval was obtained for the study from the Ethical Committee of Hamdard University. Diabetic patients of derayans community who were having diabetes from at least last six months were included in the study. Conveniently sampling techniques was used to select patients for data collection. As derayans community consist of small population, seventy diabetes patients were identified which fit into the inclusion criteria of the study and were recruited in the study. Informed and verbal consent for participation was also taken from the respondents. Respondents were ensured for the confidentiality of information verbally as well as confidentiality under taking was signed by the principal investigator. A questionnaire was developed through extensive literature review and focus group discussions. Two focus group discussions were carried out at different time intervals with 4 different groups of experts including clinicians, specialists, physicians and doctors from academia. Each group comprised 3–4 participants for the development, finalization, face and content validity of the data collection tool. Pilot testing was carried out on (10%) of the total sample size before beginning the final study. A Cronbach alpha value of 0.69 confirmed the reliability and internal consistency of the questionnaire. The questionnaire was comprised of 5 sections. The first section included information regarding patient's demographic characteristics. Section II and III included questions regarding complication of diabetes and most commonly used anti-diabetes medicines**.** Section IV and V included questions regarding diet and their practice for control of diabetes. Data was collected by the principal investigator. The questionnaire was hand-delivered to the patients by the data collectors. After data collection, data was cleaned, coded and entered in SPSS version. Skewness tests were performed and histograms with normal curves were used to check the normal distribution of data. Descriptive statistics of frequency and percentage was calculated.

RESULTS

Out of 70 patient, 74.3% (n = 52) were males whereas 25.7% (n = 18) were females. Of the total patient, 7.1 % (n = 5) were in age range of 24-34 year, 17.1 % (n = 12) in range of 35-44 year, 25.7 % (n = 18) in range 44-54 year and 37.1 % (n = 26) in range of 55-64 year. Ninety eight percent of the patients were married and 30 % (n = 21) were smokers. Nearly thirteen percent of the total patients had weight below 50 kg. A detail description is given (Table 1).

Table 1. Demographic Characteristics

Demographic Variable		n (%)
Gender	Male	52 (74.3)
	Female	18 (25.7)
	24-34	5 (7.1)
	35-44	12 (17.1)
Age	45-54	18 (25.7)
	55-64	26 (37.1)
	65-74	6 (8.6)
	75-84	3 (4.3)
	Primary	9 (12.9)
	Secondary	27 (38.6)
Education	Collage	10 (14.3)
	Diploma	8 (11.4)
	University	10 (14.3)
	Islamic Education	6 (8.6)
Smoking	Yes	21 (30)
	No	49 (70)
Marital Status	Married	69 (98.6)
	Single	1 (1.4)
	4.5-5 feet	14 (20.0)
Height	5-5.5 feet	29 (41.4)
	5.5-6feet	27 (36.6)
	35-50Kg	9 (12.9)
	51-65Kg	29 (41.4)
Weight	66-80Kg	28 (40.0)
	81-95Kg	4 (5.7)

The most common diabetes complications observed among the derayan community were: protein urea (n = 11, 15.7 %), blurred vision (n = 30, 42.9 %), skin infections (n = 11, 15.7 %), diabetic foot (n = 12, 17.1 %), diabetes ulcers (n = 12, 17.1 %) and heart diseases (n = 37, 52.9 %). A detail description is given (Table 2). The most commonly prescribed anti-diabetes agents among derayan community were: Metfromin (n = 12, 17.1 %), glimpride (n = 17, 24.3 %), insulin (n = 14, 20 %), metformin + glimpride (n = 5, 7.1 %) and glibenclamide (n = 11, 15.7 %). A detail description is given (Table 3). The most commonly performed routine test for blood glucose monitoring were: blood test (n = 44, 62.9 %), urine test (n = 1, 1.4 %) and

both (n = 25, 35.7 %). The frequency of blood glucose checked at home was: daily (n = 2, 2.9 %), weekly (n = 29, 41.4 %), fortnightly (n = 2, 2.9 %) and monthly (n = 35, 50 %). The common action taken on forgetting to take the medicines by the patient was: take the next dose as well forgotten one (n = 66, 94.3 %), take a double dose (n = 2, 2.9 %) and ask your physician (n = 2, 2.9 %). A detail description is given (Table 4).

Table 2. Most common diabetes complications among derayan community

Variable	Yes n (%)	No n (%)
Protein urea	11(15.7)	59 (84.3)
Impotence	5 (7.1)	65 (92.9)
Diabetic ketoacidosis	3 (4.3)	67 (95.7)
Blurred vision	30 (42.9)	40 (57.1)
Skin Infection	11 (15.7)	59 (84.3)
Cataract	5 (7.1)	65 (92.9)
Diabetic Foot	12 (17.1)	58 (82.9)
Diabetic Ulcers	12 (17.1)	58 (82.9)
Urinary tract infections	4 (5.7)	66 (94.3)
Oral of dental problems	3 (4.3)	67 (95.7)
Kidney disease	1 (1.4)	69 (98.6
Heart disease	37 (52.9)	33 (47.1)

Table 3. Most commonly prescribed anti-diabetes agents among derayan community

Variable	n (%)
Metformin	12 (17.1)
Glimpride	17 (24.3)
Insulin	14 (20.0)
Metformin + Glimpride	5 (7.1)
Glibenclamide	11 (15.7)
Insulin + Oral antidiabetic	4 (5.7)
Homeopathic	3 (4.3)
Metformin + Glibenclamide	4 (5.7)

Table 4. Current practices for diabetes control among derayan community

Variable		n (%)
Which one of the following test you do in routine to check your diabetes control?	Blood Test	44 (62.9)
	Urine Test	1 (1.4)
	Both	25 (35.7)
How frequently you check your blood glucose level at home?	Daily	2 (2.9)
	Weekly	29 (41.4)
	Fortnightly	2 (2.9)
	Monthly	35 (50.0)
	After more than a month	2 (2.9)
If you forget to take you anti diabetic medicine what you do immediately?	Take the next dose and forgotten one	66 (94.3)
	Take a double dose	2 (2.9)
	Ask your physician	2 (2.9)
If you are feeling tired and your hands are shaking what action you do immediately?	Go to hospital and seek medical care	38 (54.3)
	Do nothing, it's a common problem diabetic patient face	32 (45.7)
If you are feeling nausea vomiting what action you do immediately?	Take insulin or oral medicine	4 (5.7)
	Go to hospital and seek medical care	9 (12.9)
	Eat sweet thing	3 (4.3)
	Do nothing as it's common problem diabetic patient face	54 (77.1)

The common action taken on finding blood glucose lower than normal was: Immediately eat dates/sweets/chocolate (n = 17, 24.3 %), Take fresh juice (n = 17, 24.3 %) and do nothing (n = 26, 37.1 %). The most frequently eaten food item was: potatoes (n = 21, 30 %), rice (n = 22, 31.4 %) and fish (n = 11, 15.7 %). The most high carbohydrate diet considered was: potatoes (n = 30, 42.9 %) and dates (n = 34, 48.6 %). A detail description is given (Table 5).

Table 5. Common diet pattern for diabetes control among derayan community

Variable		n (%)
If you find your blood glucose level lower than normal what you do?	Immediately eat dates/sweets/chocolate	17 (24.3)
	Take fresh juice	17 (24.3)
	Take milk	10 (14.3)
	Do nothing	26 (37.1)
Which of the following food item you eat frequently?	Chicken	6 (8.6)
	Potato	21 (30.0)
	Rice	22 (31.4)
	Bread	2 (2.9)
	Meat	8 (11.4)
	Fish	11 (15.7)
In your view which of the following is the high carbohydrate diet?	Rice	3 (4.3)
	Potato	30 (42.9)
	Peanut butter	3 (4.3)
	Dates	34 (48.6)
In your view which one of the following food has less effect on glucose level?	Dates	1 (1.4)
	Fish	42 (60.0)
	Milk	27 (38.6)

DISCUSSION

The prevalence of diabetes is increasing at an alarming rate, thus, the screening of individual with risk factors e.g. positive family history, obesity, older age, history of GDM, hyperlipidemia/hypertension, sedentary lifestyle can help in early detection of diabetes to avoid its complications (Campbell, 2002). The results of the present study highlighted that diabetes was more prevalent among males and in age group of above 50 years of age. Most of the patients were obese. Similar results were reported from other studies highlighting obesity and age group after forty years risk factors associated with the prevalence of diabetes (Flegal *et al*., 2002). Diabetes is a life threatening issue as its poor control lead to many complications. Many life threatening conditions are associated with diabetes which not only increases the cost of therapy but also psychological effects on the patient. The aim of diabetes management is to eliminate the symptoms of the disease, minimizing the risk of long term complications and to promote quality of life (Inzucchi *et al*., 2012). The results of the present study showed protein urea, blurred vision and heart diseases as the most common diabetes complications among the derayan community. The results of the present study are in line with the findings of the study conducted in UK highlighting cardiovascular diseases and retinopathy as the major complications observed in diabetes patients (Group, 1998). For the treatment of diabetes, both oral and insulin therapy is used. Different oral agents are available in market i.e sulphonylureas, bigunides, thiazolidinedione, alpha-glucosidase inhibitors, GLP-1 and DPP-4 inhibitors (Moutzouri *et al*., 2011). The findings of the current study revealed metfromin, glimpride and insulin as the most commonly prescribed anti-diabetes agents among derayan community. Similar prescribing trends of anti-diabetes agents were reported from a study conducted in Saudi Arabia (Al Khaja *et al*., 2005). Self-care training has been reported to improve patient understanding, patient knowledge and attitude toward diabetes and HbA1c levels (Zareban *et al*., 2014). The present study reported that the most commonly performed routine test for blood glucose monitoring was blood test and the frequency of blood glucose checked at home was weekly by most of the patients. The

common action taken on forgetting to take the medicines by the patient was to take the next dose as well forgotten one together. Most of the patients were not familiar with the appropriate self managemt practices for the diabetes control. This might be due to the fact that usually no verbal or written counseling is provided to the patients at the healthcare facilities regarding diabetes management. Due to heavy patient load, less number of prescribers and unavailability of pharmacists at these healthcare facilitates counseling is generally ignored. Similar findings were reported from various studies conducted in developing countries (Tuomilehto *et al*., 2001; Schillinger *et al*., 2003; Singh *et al*., 2005; Doherty *et al*., 2000). Diabetes self management education enables a patient to communicate properly with their care provider to manage their diabetes by following prescribed diet plan and therapeutic regimen (Strine *et al*., 2005). The results of the present study revealed inadequate knowledge of patients regarding their diet plan and self management. Similarly lack of knowledge regarding the disease and self care was reported in diabetes patients in Nigeria (Desalu *et al*., 2011).

Conclusion

The results of the present study concluded inadequate knowledge and poor self care diabetes management among the derayan community. Diabetes self-management educational programs must be designed for the community to equip them with basic information and management skills around diet, exercise, self-monitoring and medication use. This will enables a patient to effectively manage their diabetes by following prescribed diet plan and therapeutic regimen. Prescribers and pharmacists must work in collaboration to enhance awareness among community regarding diabetes self management for better control of the disease.

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