

Awareness on Diabetes among individuals attending Urban Health Training Centre of a medical college of eastern Bihar, India

Shivani Agrawal, Kritika and Ranabir Pal*

Department of Community Medicine, Mata Gujri Memorial Medical College and Lions Seva Kendra Hospital, Purab Palli Road, Kishanganj-855107, Bihar, India

Received: 28th February 2020; Accepted: 25th March 2020; Published: 01st April 2020

Abstract: *Background:* Globally, researchers agreed that knowledge of risk factors and preventive lifestyle substantially contribute to prevalence of Diabetes mellitus and its complications. *Objective:* To assess awareness regarding prevention and complications of Diabetes mellitus among individuals attending Urban Health Training Centre of tertiary care medical institute. *Methods:* This cross-sectional study was conducted among 111 consecutive adult individuals attending outpatients department of Urban Health Training Centre of a tertiary care medical institute in eastern India during two months of 2020. Data was collected, using a preformed, pretested questionnaire containing socio-demographic variables and risk correlates. *Results:* Of the respondents, 92.79% heard the term 'Diabetes', yet good number were unaware about any prevention (39.63%) complication (45.94%), risk factors (39.63%) and symptoms (23.42%). As per American Diabetic Association 'Risk assessment score', 9.01% were found to be at increased risk of this disease. Regarding symptoms, majority knew about increase of thirst (47.74%), urination (69.36%), and hunger (42.34%). On knowledge of complications, eye disorders (49.54%), foot diseases (36.93%), heart diseases (29.72%) and stroke (19.81%) were positive responses. On the management of diabetics, great majority knew this as treatable (90.99%) and lifestyle modification can also manage diabetes up to some extent (77.47%). *Conclusion:* There was lack of awareness regarding prevention and complications of Diabetes in majority of the individuals which need to be addressed.

Keywords: Diabetes, Knowledge, Awareness.

Introduction

Globally, Diabetes Mellitus has turned up as major public health problem in developing as well as developed countries; 422 million adult diabetics account to about 8.5% of total world's population [1]. The Indian Council of Medical Research - India Diabetes Study (ICMR-INDIAB study) showed that India had 62.4 million people with diabetes in 2011 [2]. These numbers are expected to increase to 101.2 million by 2030 [3]. Keeping in view the startling increase in the incidence and prevalence of diabetics in India, the World Health Organization (WHO) has declared India as the "Diabetic Capital" of the World [4] with the upsetting fact that approximately half of them still remain undiagnosed with multiple complications [5-8].

Unfortunately, among the general population, there is less than expected awareness about the

real dimension of the problem along with existing interventions for prevention of Diabetes promoted free of cost by the state and central governments. It is now being considerably agreed that knowledge of Diabetes mellitus, its risk factors and preventive lifestyle among population will help better outcomes. Further, all these will likely have a significant positive role in early diagnosis, optimum treatment and other benefits in the general health improvements [9-11].

In our day to day healthcare practices at the Urban Health Training Centre we have also noted that there are quite a substantial number of Diabetics who are under-diagnosed and under-treated, which is alarming in nature. The investigators of this study felt that paucity of knowledge was one of the deterrent factors affecting the holistic management of

economically compromised people suffering from Diabetes and its downstream complications. With the above perspective, this study was undertaken to assess the awareness regarding prevention and complications of Diabetes mellitus among the patients attending urban health training centre.

Material and Methods

Settings and design: A cross-sectional study was carried out in the urban field practice area of a tertiary care medical college of Bihar in two months of 2020 among 111 adults aged 18 years and above. This study was done as a part of short project in partial fulfilment of the MD Community Medicine course under supervision of faculty members of the department at the Urban Health Training Centre of the Department of Community Medicine.

Study period: The study was conducted in the month of January and February 2020.

Participants: In this study, 111 adults, 18 years of age and above were recruited.

Interventions: None

Sampling design: The study was conducted among consecutive patients attending the Urban Health Training Centre during the study period.

Study instruments: The data collection tool used for the study was an interview schedule that was developed at the Institute with the assistance from the faculty members and other experts. The pilot study was conducted among general patients of comparable socio-demographic variables and the questions were modified accordingly. This pre-designed and pre-tested questionnaire contained questions relating to the information on family characteristics like residence, family history of diabetes mellitus, history of gestational diabetes, income and personal characteristics like age, gender, education, occupation, dietary habit, physical activity, and co-morbidity of hypertension.

The participants were asked about their knowledge regarding the risk factors, symptoms, causes, available treatments, and complications along with their source of information on diabetes. The study questionnaire was initially in the English language, which was translated to

Hindi for better understanding of the participants and back-translated to improve validity.

Data collection procedure: The investigators of this study informed and motivated the individuals to participate in the study. Further, the participants were explained about the purpose of conducting the study individually prior to the initiation of the recruitment process. The investigators then personally collected the responses by interview technique and recorded in the master data sheet.

The participants were ensured about the strict confidentiality of their data and ensured that this data will be used only for research purpose and will not be divulged or utilised for any other purposes. Then informed consent was taken from each of them individually prior to the initiation of the study. The investigators had taken behaviour change communication sessions with the participants and their caregivers to increase their awareness to reduce wrong ideas in individual counselling in multiple individual and group sessions based on the data collected from the study.

Inclusion criteria: Consecutive adult individuals of both genders aged 18 years and above attending Urban Health Training Centre were included in the study

Exclusion criteria: Non consenting, non cooperative and seriously ill patients were not recruited in this study.

Statistical analysis used: The collected data were carefully screened and entered into MS-Excel sheets and analyzed. Data was presented in the form of tables. Diabetes risk score was calculated using standard test questionnaires from American Diabetes Association.

Results

Out of 111 adult participants, gender was almost equally represented [Male 53 (47.74%) and Females 58 (52.25%)]. Majority (38.23%) were in the 31-45 years age group; a good number were illiterate (40.54%) who were mainly in the age group 46-60 years; 53.15%

were earning, of the non-earning 10.81% were unemployed and 36.03% were housewives [Table 1].

Table-1: Socio-demographic data of the study participants

Item	Category	Number	%
Age	18-30	31	27.92
	31-45	38	34.23
	46-60	33	29.72
	>60	9	8
Gender	Male	53	47.74
	Female	58	52.25
Education	Illiterate	45	40.54
	Primary	23	20.72
	High School	23	20.72
	Higher	20	18.01
Occupation	Employed	59	53.15
	Unemployed	12	10.81
	Pensioner	0	0
	Housewife	40	36.03

Regarding basic knowledge, 92.79% heard the term diabetes; 60.36% knew it as preventable. Surprisingly, 5% individuals thought that diabetes is a communicable disease [Table 2].

Table-2: Response of the participants about diabetes

Items	Response (Yes)	
	Number	%
Heard of Diabetes	103	92.79
Any known diabetic	84	75.67
Is diabetes communicable	5	4.5
Is diabetes preventable	67	60.36
<i>Diabetes characterised by:</i>		
High blood sugar	88	79.27
High urine sugar	75	67.56
Low blood sugar	12	10.81
Low urine sugar	0	0
Don't know	14	12.61

Majority could respond correctly more than 2 risk factors viz. consuming more sweets (80.18%), family history of diabetes (50.45%), lack of physical activity (49.54%), overweight (39.63%),

mental stress (27.02%) and 14.41% were unaware about any of the risk factors [Table 3]. Regarding symptoms, responses were, weight gain (21.62%), frequent thirst (47.74%), frequent urination (69.36%) frequent hunger (42.34%) and 18.91% knew that diabetic patients can be asymptomatic as well; 23.42% were unaware about any symptoms [Table 3].

Concerning complications, they knew about eye disorders (49.54%), foot diseases (36.93%), heart diseases (29.72%) and stroke (19.81%); 45.94% could not recollect any such [Table 3].

Table-3: Knowledge of the participants about risk factors, symptoms & complications of diabetes

		Response (Yes)	
		Number	%
Risk Factors	Mental Stress	30	27.02
	Eating Sweets	89	80.18
	Increase Weight	44	39.63
	Lack of Exercise	55	49.54
	Family History	56	50.45
	Don't know	16	14.41
Symptoms	Weight gain	24	21.62
	Frequent thirst	53	47.74
	Frequent urination	77	69.36
	Frequent hunger	47	42.34
	Asymptomatic	21	18.91
	Don't Know	26	23.42
Complication	Eye disorder	55	49.54
	Stroke	22	19.81
	Heart disease	33	29.72
	Foot disease	41	36.93
	Don't Know	51	45.94

Majority were aware about preventive factors viz. Exercise (54.95%), Diet (59.45%); 39.63% never heard about any of the preventive measures of diabetes. On the management of diabetes, a great majority (90.99%) said, medications can treat diabetes and 77.47% participants knew that lifestyle modification can also manage diabetes up to some extent [Table 4].

Table-4: Knowledge of the participants about the prevention & management of diabetes			
		Responses (Yes)	
		Number	%
Prevention	Exercise	61	54.95
	Diet	66	59.45
	Weight control	48	43.24
	Not smoking	37	33.33
	Don't know	44	39.63
Management	Medicine	101	90.99
	Injection	70	63.06
	Lifestyle modification	86	77.47
	Home remedies	33	29.72
	Ayurveda	18	16.21
	Don't know	10	9.01

Regarding source of information, 36% received the information from their family members or friends. Out of the total study participants, 18.91% acquired information through newspaper/magazine, 22.52% from radio/television and 37.83% from medical staff [Table 5].

Table-5: Source of Information on Diabetes of the participants		
	Responses (Yes)	
	Number	%
Newspaper/Magazine	21	18.91
Medical staff	42	37.83
Radio/Television	25	22.52
Family/Friends	85	76.57

On calculating the Risk Assessment Score (American Diabetes Association), 9.01% were at increased risk of having diabetes (score ≥5).

Discussion

Knowledge is a logical requirement for the intended performance of health related behaviour. As knowledge accumulates, changes in attitudes are initiated and over a period of time, it results in the change in behaviour. This study was undertaken among type 2 diabetes mellitus patients, to assess their awareness about diabetes. It is a well established fact in medical literature that prevention of diabetes cannot be obtained unless general population including high-risk groups know how to protect themselves [12-14].

In this study, even though 92.79% of the respondents had heard of diabetes but majority of them could not correctly define it. Similar finding was seen in a study by *Kurian, et al.* [15] where 97% of the respondents had heard about the term diabetes. But in a study by *Deepa, et al.* [5] only 43.2% of the participants knew about a condition called diabetes.

The risk of having diabetes is determined by interaction between genetic and metabolic factors. These include family history of diabetes, ethnicity, previous history of gestational diabetes, obesity, overweight, unhealthy diet, smoking and physical inactivity. Overweight and obesity, along with physical inactivity, are estimated to cause a large proportion of the global diabetes burden [16].

Several dietary practices can lead to increased body weight and/or type 2 diabetes risks, including high intake of saturated fatty acids, high total fat intake and inadequate consumption of dietary fibre [17]. High intake of sugar sweetened beverages, having high amount of free sugars, increases the likelihood of being overweight or obese, particularly among children [18]. When enquired about the knowledge of risk factors, family history was reported as a risk factor for diabetes by nearly half of the participants but was reported by one-fourth of the participants in the other study [5].

In our study, one-fourth of the participants were unaware about the symptoms of diabetes. Similar observation was reported from *Kurian, et al.* [15]. In a study conducted in Bangladesh by *Fottrell E, et al* [19] approximately 55% being aware of any symptoms of diabetes. Active (different from passive) smoking increases the risk of type 2 diabetes. Risk remains high even after cessation of smoking for 10 years. Awareness about risk factors was less in the study population as 14.47% of the study population could not identify any of the risk factors for diabetes whereas in *Kurian, et al.*[15] more than one-fourth of the study population (27.1%) could not identify any of the risk factors for diabetes. Poor glycemic control in

DM patients increases the risk of development of complications of diabetes. This includes retinopathy (i.e. damage to eyes) leading to blindness, nephropathy (i.e. damage to kidneys) leading to renal failure, neuropathy (i.e. damage to nerves) leading to impotence and diabetic foot disorders (which include severe infections leading to amputation).

In our study, nearly half of the participants were aware about more than one complication. Whereas in *Aljin V et al* [1] study 63.3% of the participants were aware of the complications due to T2DM like retinopathy and neuropathy which was similar to the results obtained in a study done by Shah et al [20]. The research groups from India showed that health education interventions have positive impact on Diabetes intervention [21-22]. Other Indian research groups are working on advanced research correlates for better interventions of Diabetes mellitus [23-24].

For capacity building in diabetes education in India, two chief nationwide efforts to train physicians [Certificate Course in Evidence Based Diabetes Management (CCEBDM)] and diabetes educators [National Diabetes Educator's Program (NDEP)] have helped a lot. The former program, CCEBDM was launched by Public Health Foundation of India and Dr. Mohan's Diabetes Education Academy (DMDEA) with the fundamental objective of improving the treatment outcomes for patients by providing evidence based guidance to physicians and general practitioners [25].

The study emphasizes on the need for improvement in knowledge and awareness among both the general population as well as diabetics in order to achieve prevention and control of diabetes and its complications. Improved knowledge on diabetes can improve glycemic control and treatment satisfaction in patients. Therefore, health programs should target improvement of health education levels on diabetes in those with minimal or no formal education.

Strengths of the study: This is the novel study on the assessment of awareness in this eastern most

district of Bihar among people from predominantly low socio-economic status. The outcome of the study has helped us to organise behaviour change communication, teaching modules for sustainable changes in cognitive domain of patients with Diabetes and their caregivers. Lastly, data were described following STROBE format available from Equator network in this manuscript following in letter and spirit.

Limitations of the study: We had several limitations in this study. Firstly, this was a single centre, small sample size, self-funded cross-sectional study which has limited validity related only to population covered under Urban Health Training Centre. Secondly, some participants could not be enrolled for the study due to language barrier.

Future directions of study: The research group of this study feel that similar studies in different locations in other districts are required with a larger and appropriate sample size to make the results truly representative of our state for which we are planning for extramural funding.

Conclusion

To summarise, the present study provides a picture of the current scenario of knowledge and awareness of diabetes. There was poor awareness regarding prevention and complications in majority of the study participants. This emphasizes the need for more diabetes awareness activities in the form of mass campaigns in the urban areas of India.

Recommendations

In this study, certain deficit areas in knowledge regarding diabetes were identified which needs to be addressed through a well-planned community based awareness program focusing on behaviour change.

Acknowledgement

The authors are thankful to Mata Gujri University and the Department of Community Medicine for the approval and support in the study.

Financial Support and sponsorship: Nil

Conflicts of interest: There are no conflicts of interest.

References

- Aljin V, Umadevi R, Anantha Eashwar VM. Awareness of diabetes among patients with type 2 diabetes mellitus attending a rural health and training centre. *Int J Community Med Public Health*. 2018; 5(10): 4597-4602.
- Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R et al. Prevalence of diabetes and prediabetes (impaired fasting glucose and/or impaired glucose tolerance) in urban and rural India: Phase I results of the Indian Council of Medical Research-India Diabetes (ICMR-INDIAB) study. *Diabetologia* 2011; 54:3022-3027.
- International Diabetes Federation. In: Unwin N, Whiting D, Guariguata L, Ghyyot G, Gan D, editors. *Diabetes Atlas*. 5th ed. Brussels, Belgium: *International Diabetes Federation*; 2011; 11-74.
- Gulabani M, John M, Isaac R. Knowledge of diabetes, its treatment and complications amongst diabetic patients in a tertiary care hospital. *Indian J Community Med*. 2008; 33:204-206.
- Deepa M, Bhansali A, Anjana RM, Pradeepa R, Joshi SR, Joshi PP, et al. Knowledge and awareness of diabetes in urban and rural India: The Indian Council of Medical Research India Diabetes Study (Phase I): Indian Council of Medical Research India Diabetes 4. *Indian J Endocr Metab* 2014; 18:379-385.
- Bharati DR, Pal R, Rekha R, Yamuna TV. Evaluation of the burden of type 2 diabetes mellitus in population of Puducherry, South India. *Diabetes Metab Syndr*. 2011; 5(1):12-16.
- Bharati DR, Pal R, Kar S, Rekha R, Yamuna TV, Basu M. Prevalence and determinants of diabetes mellitus in Puducherry, South India. *J Pharm Bioallied Sci*. 2011; 3(4):513-518.
- Singh M, Pal R, Ranjan R, Sarker G, Bharati DR, Pal S. Diabetes and Dementia: Myth and reality. *J Krishna Inst Med Sci Uni*. 2017; 6(4):12-17.
- Park K. Park's Textbook of Preventive and Social Medicine. 25th ed. Jabalpur, India: *M/s Banarsidas Bhanot*. 2019; 421-426.
- Paul SK, Ghosh A, Pal R, Pal S. Diet in diabetes: Conceptual and contextual. *J Integr Health Sci*. 2018; 6(2):48-52.
- Zaman FA, Pal R, Zaman GS, Swati IA, Kayyum A. Glucose indices, frank and undetected diabetes in relation to hypertension and anthropometry in a South Indian rural population. *Indian J Public Health*. 2011; 55(1):34-37.
- Mc Manus RM, Stitt LW, Bargh GJ. Population survey of diabetes knowledge and protective behaviours. *Can J Diabetes*. 2006; 30:256-263.
- Fritsche A, Stumvoll M, Goebbel S, Reinauer K M, Schumling RM, Haring HU. Long term effect of a structured inpatient diabetes teaching and treatment programme in type 2 diabetic patients: Influence of mode of follow-up. *Diabetes Res Clin Pract*. 1999; 46:135-141.
- Nicolucci A, Ciccarone E, Consoli A, Di Martino G, La Penna G, Latorre A et al. Relationship between patient practice-oriented knowledge and metabolic control in independently treated type 1 diabetic patients: Results of the validation of the knowledge and practices diabetes questionnaire. *Diabetes Nutr Metab*. 2000; 13:276-283.
- Kurian B, Qurieshi MA, Ganesh R, Leelamoni K. A community-based study on knowledge of diabetes mellitus among adults in a rural population of Kerala. *Int J Non-Commun Dis* 2016; 1:59-64.
- GBD 2013 Risk Factors Collaborators. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015; 386(10010):2287-2323.
- Ley SH, Hamdy, O, Mohan V, Hu FB. Prevention and management of type 2 diabetes: dietary components and nutritional strategies. *Lancet* 2014; 383(9933):1999-2007.
- WHO Guideline: sugars intake in adults and children. *Geneva: World Health Organization*. 2015.
- Fottrell E, Ahmed N, Shaha SK, Jennings H, Kuddus A, Morrison J et al. Diabetes knowledge and care practices among adults in rural Bangladesh: a cross-sectional survey. *BMJ Glob Health*. 2018; 3(4):e000891.
- Shah VN, Kamdar PK, Shah N. Assessing the knowledge, attitudes and practice of type 2 diabetes among patients of Saurashtra region, Gujarat. *Int J Diab Dev Ctries*. 2009; 29(3):118.
- Pal R, Pal S, Barua, Ghosh MK. Health Education intervention on Diabetes in Sikkim. *Indian J Endocrinol Metab*. 2010; 14(1):3-7.
- Chawla SPS, Kaur S, Bharti A, Garg R, Kaur M, Soini D, Ghosh A, Pal R. Impact of health education on knowledge, attitude, practices and glycemic control in type 2 diabetes mellitus. *J Family Med Prim Care*. 2019; 8(1):261-268.
- Bhutia Y, Ghosh A, Sherpa ML, Pal R, Mohanta PK. Serum malondialdehyde level: Surrogate stress marker in the Sikkimese diabetics. *J Nat Sci Biol Med* 2011; 2(1):107-112.
- Ghosh A, Sherpa ML, Bhutia Y, Pal R, Dahal S. Serum nitric oxide status in patients with type 2 diabetes mellitus in Sikkim. *Int J Appl Basic Med Res*. 2011; 1(1):31-35
- Joshi S, Joshi SR, Mohan V. Methodology and feasibility of a structured education program for diabetes education in India: The National Diabetes Educator Program. *Indian J Endocrinol Metab*. 2013; 17:396-401.

Cite this article as: Agrawal S, Kritika and Pal R. Awareness on Diabetes among individuals attending Urban Health Training Centre of a medical college of eastern Bihar, India. *Al Ameen J Med Sci* 2020; 13(2):88-93.

This is an open access article distributed under the terms of the Creative Commons Attribution-Non Commercial (CC BY-NC 4.0) License, which allows others to remix, adapt and build upon this work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

*All correspondences to: Dr. Ranabir Pal, Professor, Department of Community Medicine, Mata Gujri Memorial Medical College and Lions Seva Kendra Hospital, Purab Palli Road, Kishanganj-855107, Bihar, India. E-mail: ranabirmon@yahoo.co.in