

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Knowledge and Awareness of Diabetes Mellitus among Patients in a Tertiary Care Hospital in Southern India.

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ABSTRACT

To assess the knowledge and awareness about the risk factors, complications and management of Diabetes among patients (diabetic and nondiabetic) visiting medicine out-patient department of a hospital. A survey was conducted using a structured questionnaire (Diabetes Knowledge and awareness Questionnaire) validated by seven experts on 120 patients visiting the medicine department. Diabetic patients were further assessed for the practice they follow in order to control diabetes. The knowledge of the patients was assessed using set of 5 questions. Most people were aware of the disease called as diabetes (75.8%) and risk factors (83.3%). Level of knowledge between diabetics and non-diabetics was analysed regarding risk factors, complication and management and was found to be higher in case of diabetics. Practices regarding foot care were found to be on the down side. More number of educational programs is required to enhance the level of knowledge and awareness in a country where cases of diabetes is reaching epidemic proportions.

Keywords: Knowledge, Awareness, Education, Diabetes

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INTRODUCTION

Diabetes mellitus is a chronic metabolic disease leading to enormous changes in lifestyle leading to many grave complications which has important implications on patient's wellbeing and social life. Management of diabetes involves complex treatment coupled with extensive work on patient education. WHO predicts that the prevalence rate is expected to be 5.4% globally in 2025, projecting a raise from 4% in 1995 [1]. As per Wild et al. the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 and maximum number of cases will be from India [2]. Studies have indicated that diabetes affects 10-16 % of urban Indian population [3-5] and possess a great economic challenge consuming 5-25% of family income [6].

As per the literature search, studies assessing the level of knowledge and awareness about diabetes were few in a country like India which is leading with highest number of diabetic cases [7,11]. These studies can be very important in setting up national diabetes control program [7]. Patient education can prove to be immense in assuring better treatment and control of diabetes. Various studies have shown that expanding the knowledge of the patient leads to increased compliance and hence reduced complications.[8-10] Here in this article we are trying to draw attention towards the level of awareness and knowledge of diabetes in general as well as diabetic population. We have also tried to highlight the issues like lack of awareness among the patients regarding importance of physical activity and effect of obesity in diabetes control which is the important factors effecting in diabetes and its complication.

MATERIAL AND METHODS

A cross sectional study was conducted in an outpatient department of tertiary care hospital for a period of one month and 120(N-49, 40.8% females) subjects were randomly selected for the survey. Both general and diabetic patients were selected for this study. Approval from institutional ethics committee was obtained prior to commencement of the study and written patient informed consent was obtained in the local language.

Diabetic patients (N-44) were further asked few close ended questions concerning the practices they follow in order to manage diabetes. Their response towards medication adherence, glucose monitoring, physical exercise and foot care was recorded.

Data was collected using modified Diabetes Knowledge and Awareness Questionnaire which included details on demography of the patients and questions about the knowledge and awareness of different facets of diabetes. Open ended questions were asked regarding causative factors and complications of diabetes to assess the knowledge. Modified Diabetes Knowledge and Awareness questionnaire was used here which have been used in other studies as well [7]. The questionnaire was validated by seven experts. Subjects with diabetes were also assessed regarding the practices to control the disease. The questions were translated in local language and interview was conducted by a trained interviewer.

Statistics

Statistical analysis was performed using SPSS ver. 20.0. Results are expressed as frequencies for quantitative variables.

RESULTS

Demographics of Respondents

A total of 120 subjects consisting of both diabetic (N-44) and non-diabetic (N-76) patients were interviewed at random from those who visited outpatient department. Of the 120 subjects, 71(59.2%) were males and 49(40.8%) females. The demographic characteristics of the respondents are listed in Table 1.

Table 1- Demographics of the patients (N-120)

Patients Characteristics		N (%)
Mean age		46.13 (IQR-20.5)
Gender		
• Male		71 (59.2%)
• Female		49 (40.8%)
Occupation		
• office		48 (40%)
• house work		19 (15.8%)
• business		12 (10%)
Education		
• higher secondary		33 (27.5%)
• graduate		44 (36.7%)
BMI(kg/m ²)	Normal	54 (45%)
	Over weight	29 (24.2%)
	Obese	8 (6.7%)
Median Glucose level(mg/dl)	PPBS	118.5 (sd-60.60)
	RBS	114.5 (sd-58.78)

Knowledge about Diabetes and Its Prevalence

The knowledge about diabetes was assessed in the population using set of five questions. Among the total population, 91(75.8%) people were aware of the condition called diabetes. 100(83.3%) agreed to the fact that more people are being affected by diabetes these days and were of the risk factors as well. Fig. 1 discusses about the knowledge in self-reported diabetics and general population and as expected people with diabetes were more aware about the conditions than the general population.

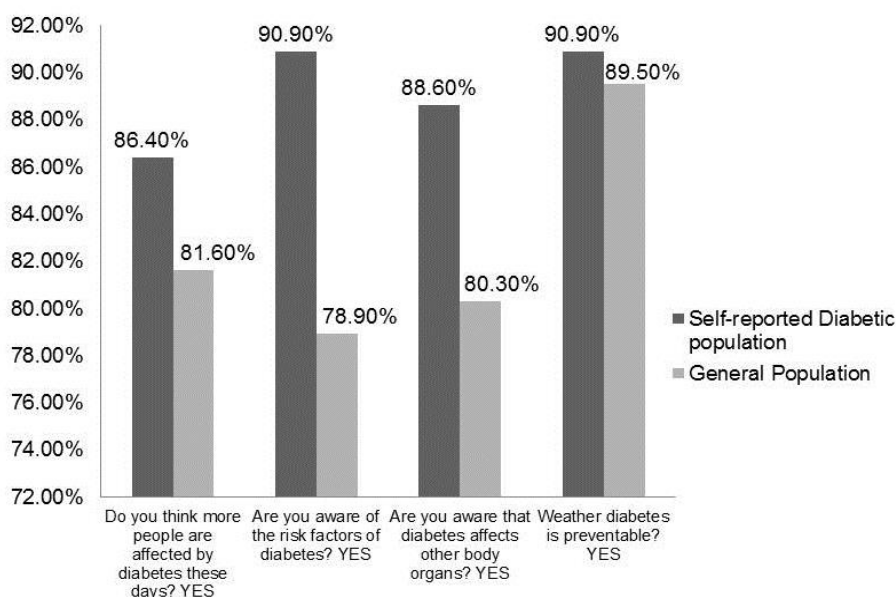


Figure 1: Awareness about diabetes among general population and self-reported population

Knowledge about the Risk Factors

Among the total population (N-120), those who were aware of the risk factors i.e. 100(83.3%) considered family history (90.4%) as the major risk factor followed by lack of physical activity (92.3%). Major risk factors as per diabetics were family history (84.1%) and lack of physical activity (84.1%).It was disheartening to see that number of diabetics had low knowledge that high sugar consumption and overweight can worsen the condition but they were well aware about the genetic predisposition of diabetes as seen in fig. 2. Among the general population the awareness of risk factors was less than the diabetics.

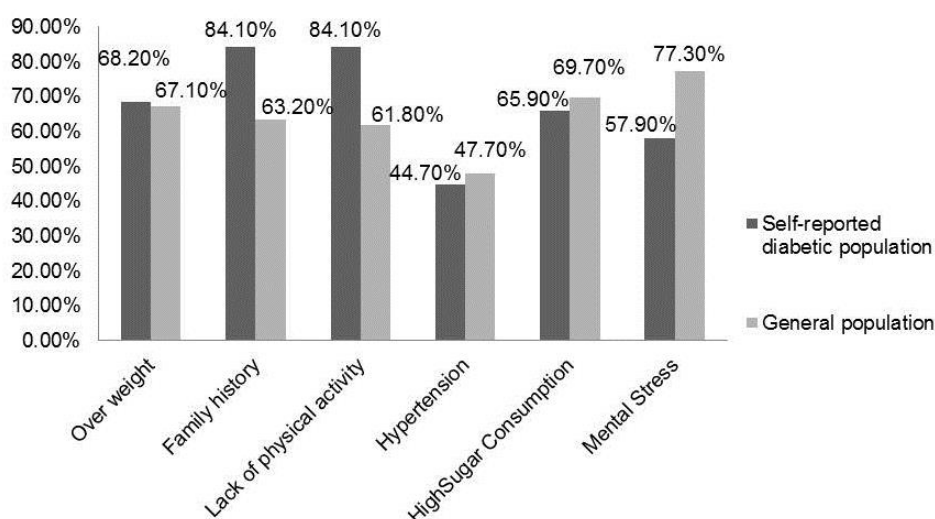


Figure 2: Awareness about risk factors among general and self-reported diabetic population

Awareness of Complication of Diabetes

Awareness about the organs which are affected by the diabetes is highlighted in Fig. 3. Among the general population who answered “Yes” for the question “Are you aware that the diabetes can affect the other body organs?”, the most common organs reported were eyes(72.40%), kidney(60.50%), feet(55.30%) followed by heart and nerves. Among diabetic subjects the knowledge was comparatively better (eyes-84.109%, kidney-77.30%, heart-75%, feet-70.50% and nerve problems-56.80%).The level of knowledge among the diabetics was still low especially with regards to foot care. Many were not aware about the loss of sensation in the extremities as one of the complications of diabetes.

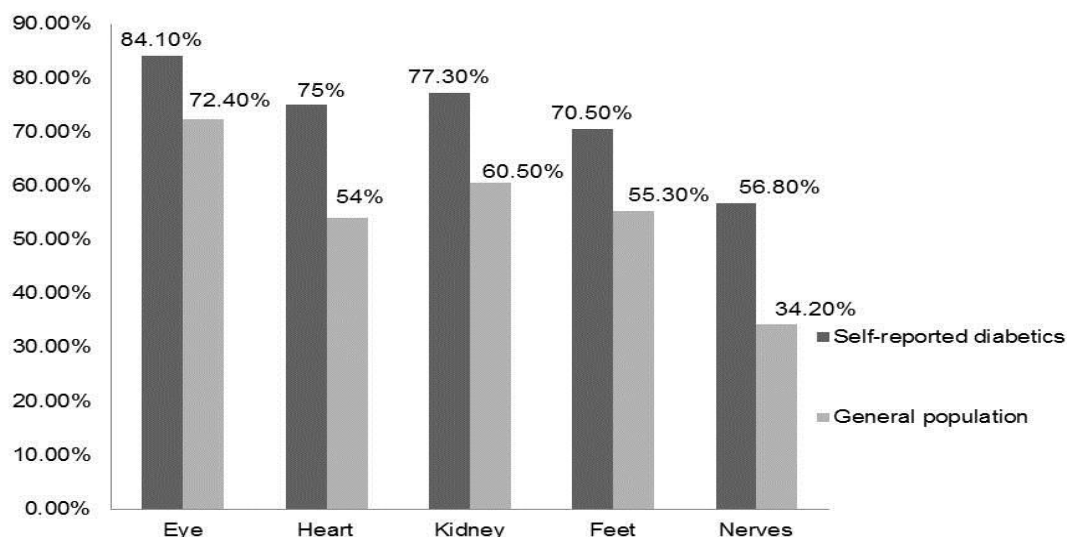


Figure 3: Awareness about complications among general and self-reported diabetic population

90% (N=108) of the total subjects agreed that diabetes can be prevented out of which 87.5% agreed that the diabetes can be prevented by both diet and exercise while 90% agreed it can be prevented through diet itself.

Practice among Diabetics

Diabetic patients were further enquired about the practices followed in order to manage diabetes. Four questions were asked regarding the medication adherence, foot care, physical activity and glucose monitoring, as shown in the figure.

Even though the level of awareness among diabetics is high still patients showed less concern towards foot care and exercise. As seen in fig. 4.

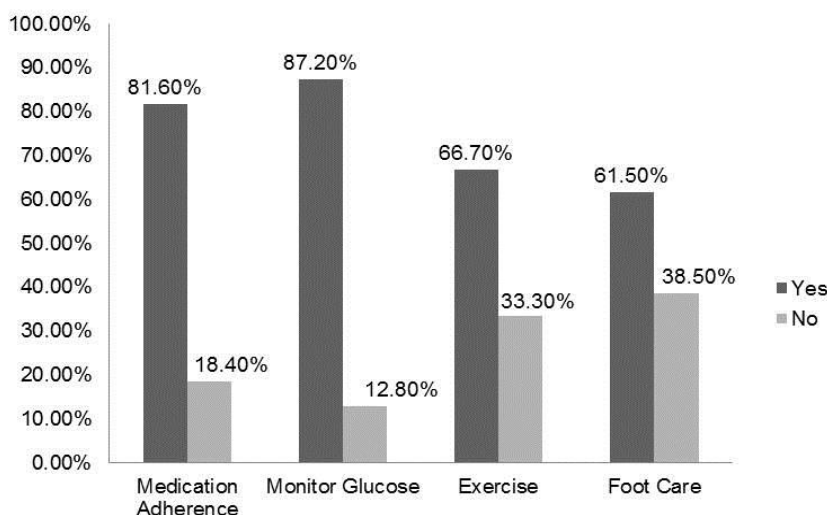


Figure 4-Practices among diabetics

DISCUSSION

The management of diabetes does not only include prescription medicine by the physician but also requires holistic approach involving intensive patient education and counselling. The major finding in this study is the lack of awareness of diabetes among the residents. This is a worrying fact considering that India leads the world with over 32 million diabetic subjects and these numbers will increase to 79.4 million by the year 2030 [2]. As we know increased prevalence of diabetes can lead to negative effect on the economies of developing nations especially in a country like India where the highest increase is observed in the age group of 45-64 years which constitute the major work force. Knowledge concerning diabetes mellitus is important as it can help in educating patients regarding medication adherence, diet, blood glucose monitoring and taking oral medication and insulin [11].

This study shows that overall 75.8% people were aware about the condition called diabetes and related problems which is quite less considering the growing number of cases in India. Similar results were also observed in CURES-9 study [7]. It was encouraging to see that the self-reported diabetic population had more knowledge as compared to the general population which was expected. Among general population many were not aware of the risk factors leading to type 2DM and if diabetes affects other organs. But many acknowledged the fact that diabetes is preventable.

Among the overall population which were aware about the risk factor most of them considered family history and lack of physical activity as the major risk factors. One of the major observations observed in diabetic group was many of them did not consider over weight and high sugar consumption as a major risk factors. Similar results were observed in CURES-9 study where family history was considered to be the major risk factor and awareness about high sugar consumption was low [7]. This highlights about the awareness among people about genetic predisposition of diabetes. It is notable that obesity or over weight was not considered to be a major risk factor for diabetes since many people in India associated under nutrition as a

sign of poverty and obesity is considered as a sign of prosperity and good health. Hence, efforts are needed to make people aware about the ill-effects of obesity in diabetes [12].

Among people who knew about diabetes related complications (83.3%), the most common complication were eye related problems for both diabetic and general population. One of the noteworthy points was that most of the people were aware about the complication of diabetes. Early detection of symptoms can help in timely management of the disease. Particularly many type 2DM patients remain undiagnosed until they develop severe complications. Proper knowledge about the complications in patients would enable them to think seriously and seek timely medical attention [13]. Knowledge about symptoms such as blurring of vision and loss of sensation in the extremities reduces chances of loss of vision and need for amputation [14-16].

Encouraging results were observed when the patients were asked whether diabetes can be prevented; more than 90% answered positively which points out at increased awareness at the community level. Recent studies such as Diabetes Prevention Programme and the Finnish Diabetes Prevention Study have shown that diabetes is preventable. Contrary to CURES-9 study which was conducted in Chennai population, residents of this region agreed to the fact that diabetes was preventable by proper diet and exercise which can be attributed to higher education standards among the respondents [7].

Diabetic population (36.6%) were asked about the practices they follow in order to manage the disease. Most of the population took medication regularly and kept close tab on glucose monitoring, but less regard towards foot care was evident. This further strengthens our point regarding lack of knowledge about complications of foot in diabetes. The lack of awareness about foot care can lead to various complications such as varicose vein, diabetic foot ulcers and amputation hence requiring efforts to increase the awareness.

Even though this study has given us few positives but it can be safely assumed that the situation in rural areas is much worse where knowledge about diabetes is extremely poor. Since the prevalence of diabetes is beginning to rise in rural areas there is a need to increase diabetes related educational activities. Since we have seen in this study that obesity is considered to be a marker of good health and prosperity, we need proper measures to address this issue by highlighting the association between overweight and diabetes. This study provides an insight on the knowledge and awareness among diabetics and general population in Southern Karnataka. There was more awareness regarding diabetes in the diabetic patients compared to general population. It points at the need of various public health policies in order to increase the knowledge and awareness levels to achieve prevention and better control of diabetes and its complications in the general population. Particular initiatives have to be taken in case of educating people regarding their dietary habits, physical activities and healthy lifestyle.

ACKNOWLEDGMENTS

The authors would like to acknowledge Manipal College of Pharmaceutical Sciences, Kasturba Medical College and Manipal University for their support and assistance for carrying out the study.

REFERENCES

- [1] Diabetes Estimates 1995-2025. WHO Diabetes Database, 1999. WHO/OMS, 2000. Latest update: 17 May 2000.
- [2] Wild S, Roglic G, Green A, Sicree R, King H. Diabetes Care 2004;27(5):1047-53.
- [3] Ramachandran A, Snehalatha C, Kapur A, Vijay V, Mohan V, Das AK, Rao PV, Yajnik CS, Prasanna Kumar KM, Nair JD. Diabetologia 2001;44(9):1094-101.
- [4] Mohan V, Shanthirani CS, Deepa R. J Assoc Physicians India 2003;51:771-77.
- [5] Pradeepa R, Mohan V. Indian J Med Res 2002;116:121-32.
- [6] Shobhana R, Rama Rao P, Lavanya A, Williams R, Vijay V, Ramachandran A. Diabetes Res Clin Pract 2000 ;48(1):37-42.
- [7] Deepa M, Deepa R, Shanthirani CS, Manjula D, Unwin NC, Kapur A, Mohan V. J Assoc Physicians India 2005;53:283-287.
- [8] Harris MI, Eastman RC. Diabetes Metab Res Rev 2000;16(4):230-6.

- [9] Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R, Bhansali A, Joshi SR, Joshi PP, Yajnik CS, Dhandhanika VK, Nath LM, Das AK, Rao PV, Madhu SV, Shukla DK, Kaur T, Priya M, Nirmal E, Parvathi SJ, Subhashini S, Subashini R, Ali MK, Mohan V; ICMR–INDIAB Collaborative Study Group. 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(12):3022-7.
- [10] Visser A, Snoek F. *Patient Education Counseling* 2004;53(3):251-5.
- [11] Saleh F, Mumu SJ, Ara F, Begum HA, Ali L. *BMC Public Health* 2012;12:1112.
- [12] Deepa M, Bhansali A, Anjana RM, Pradeepa R, Joshi SR, Joshi PP, Dhandhanika VK, Rao PV, Subashini R, Unnikrishnan R, Shukla DK, Madhu SV, Das AK, Mohan V, Kaur T. *Indian J Endocrinol Metab* 2014 ;18(3):379-85.
- [13] Wee HL, Ho HK, Li SC. *Singapore Med J* 2002;43(3):128-34.
- [14] *Clinical Practice Recommendation 2000*. American Diabetes Association. *Diabetes Care* 2000; 23 Suppl 1:S1-116.
- [15] Ryder B. *BMJ* 1995;311(6999):207-8.
- [16] Prevention of diabetes mellitus. Report of a WHO Study Group. *World Health Organ Tech Rep Ser*. 1994;844:1-100.