# Perceptions and practices of type 2 diabetics: A crosssectional study in a tertiary care hospital in Kolkata

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Background: In the context of an alarming increase in the magnitude of type 2 diabetes mellitus in Indian population, the prevailing perceptions and practices of diabetics assume immense importance in the control of disease. Methods: This study was conducted with the aim of assessing the knowledge, attitude and self-reported practices regarding diabetes among the patients attending an OPD in a tertiary care hospital in Kolkata using a pretested questionnaire. Results: The findings of this study revealed that knowledge regarding symptoms and complications of the disease was poor except for frequent urination (42.2%) and eye complication (62.5%); however, only 25% patients had gone for eye examination during the last 1-year of their treatment. Awareness on detecting early complications of diabetes like periodic eye examination, BP monitoring and awareness on hypoglycemia, foot care were found to be poor. Attitude toward regular exercise and dietary modification in diabetics was found to be favorable in the majority; however, while compliance to dietary modification was reported to be high (82.8%) it was low with regular exercise (32.8%). Conclusion: Diabetic patients rely mostly on drugs and dietary modification for disease control while neglecting other lifestyle modification. Promotion of healthy lifestyle modifications and self-care should be incorporated as part of diabetes education in all treatment facilities.

**KEY WORDS:** Perceptions, practices, type 2 diabetes mellitus

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#### Introduction

Around 3 million people across the world die of diabetes

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every year. Of all chronic non-communicable diseases, diabetes is associated with the highest co-morbidities and complications and affects people from all socio-economic backgrounds.<sup>[1]</sup> Type 2 diabetes plays an important causal role in hypertension, dyslipidemia, upper body obesity, coronary artery disease, blindness and renal failure.<sup>[1]</sup> Worldwide the total number of people with diabetes is projected to rise from 171 million in the year 2000 to 366 million in 2030.<sup>[2]</sup> In the year 2007, diabetes resulted in 3.8 million deaths globally (6% of world mortality), the same figure as that of HIV/AIDS.<sup>[3]</sup> India has been hailed as the diabetes capital of the world.<sup>[4]</sup> Epidemiological studies from different parts of the country show that diabetes in adult urban Indian population varies from 5.4% in the northern states to as high 12.3-15.5% in Chennai, 5.6% in Puducherry, South India, to 12.3-16.8% in Jaipur, Central India while 3% of rural population above the age of 15 years have diabetes.<sup>[5-8]</sup> Moreover, there is a large pool of subjects with impaired glucose tolerance who are at a high risk of conversion to diabetes.<sup>[9,10]</sup> However, despite such high prevalence, awareness on diabetes and its treatment still remain major challenges, particularly in the context of developing countries like India. Prevention is important because the burden of the disease on healthcare and its economic implications are enormous.<sup>[11]</sup> Very few studies have been carried out in our country to find the prevailing level of awareness, attitudes and practices among diabetic patients, which can help in the development of future health education programs or interventions targeting the disease.<sup>[12,13]</sup>

The objectives of this study are:

- 1. To describe the distribution of patients with type 2 diabetes mellitus attending diabetic clinic of a tertiary care facility, with regard to certain sociodemographic factors.
- 2. To determine their level of knowledge, attitude and practices with regard to the disease.

#### **Materials and Methods**

A hospital-based, cross-sectional, observational study was conducted among 64 patients attending a diabetes clinic in a tertiary care hospital during the study period of February to July 2008. The study population comprised all the patients aged above 30 years diagnosed with type 2 diabetes mellitus more than a year back and visiting the hospital for follow-up care. Written informed consent was obtained from them. A questionnaire was developed and tested on 10 patients and suitably modified after consultation with experts. This pretested predesigned questionnaire was used to interview the patients regarding their sociodemographic characteristics, knowledge, attitude and practices related to diabetes mellitus. Knowledge had 13 questions regarding general awareness on diabetes mellitus, its symptoms, complications, prevention and control. Eight questions related to attitude regarding the usefulness of influencing/modifying life style factors and investigations in the management of the disease. Practice had eight questions regarding life style and dietary habits, monitoring of blood glucose, drug compliance, eye examination and foot care. The data obtained were then compiled and analyzed using simple proportions.

#### Results

The mean age of the patients was  $52 \pm 6.84$  years; 43 (67.2%) patients were males and 21 (32.8%) were females. Ten patients (15.6%) were illiterate and the remaining 54 (84.4%) were educated but majority (65.6%) of them did not study beyond secondary level. Of the males, 9 persons (20.9%) were unemployed and most of the females (93.8%) were housewives. More than a third of our subjects (34.4%) reported a history of diabetes mellitus in their first-degree relatives.

Only 37 patients (57.8%) knew that diabetes is a condition characterized by raised blood sugar, 16 patients (25.0%) knew that it resulted from a defect in insulin, 45 patients (70.3%) responded that the disease affects people in the economically productive age group, 48 (75%) knew that both sexes could be affected and only 27 persons (42.2%) regarded it as a lifelong disease.

Only 3.1% knew that the disease could be asymptomatic. Frequent urination was reported as the most common symptom of diabetes by 27 patients (42.2%). Regarding complications resulting from diabetes, awareness on eye disorder was found to be the highest in 40 patients (62.5%) followed by kidney diseases (59.3%) and heart diseases in 34.4%. Healthy diet was believed to be the most common lifestyle factor that could prevent the disease. Knowledge on other lifestyle factors was poor [Table 1].

Drugs and dietary modification were the most common management options reported by 52 patients (81.3%) and 46 patients (71.9%), respectively. Awareness on hypoglycemia, need for periodic eye examination, BP monitoring and foot care in diabetics was found to be very low [Table 2].

# Table 1: Distribution of respondents according to their awareness on symptoms, complications and prevention of diabetes (n = 64)

Issues on awareness	Correct responses		
	No.	%	
Symptom(s) of diabetes			
Weight gain/loss	7	10.9	
Frequent urination	27	42.2	
Frequent hunger	23	35.9	
Frequent thirst	4	6.3	
Asymptomatic	2	3.1	
Complication(s) of diabetes			
Heart disease	22	34.4	
Kidney disease	38	59.3	
Eye disease	40	62.5	
Stroke	4	6.3	
Foot problems	4	6.3	
Death	7	10.9	
Others	12	18.6	
Lifestyle factor(s) which can prevent diabetes			
Healthy diet	49	76.5	
Regular exercise	25	39.0	
Weight control	5	7.8	
Quit smoking	2	3.1	

## Table 2: Distribution of respondents according to their awareness on care in diabetes (n = 64)

Care in diabetes	No.	%
Diabetes is treated with		
Drugs	52	81.3
Insulin	38	59.3
Healthy diet	46	71.9
Regular exercise	42	65.6
Weight control	10	15.6
Quit smoking	2	3.1
Symptom(s) of hypoglycemia		
Sweating	3	4.7
Dizziness	2	3.1
Weakness/fatigue	6	9.4
Control of hypoglycemia	4	6.3
Allied care		
Blood sugar examination	44	68.7
Eye examination	13	20.3
Foot care for diabetics	2	3.1
BP monitoring	4	6.3

Attitude toward dietary modification and regular exercise was favorable in 82.8 and 60.9% of diabetics, respectively. But 17.2% patients believed that once diabetes is controlled, eating restrictions are not required and 39.1% felt that insulin was the last treatment option and should be avoided as far as possible [Figure 1].

Regarding their self-reported practices during the previous 1 month, it was found that only compliance to taking drugs (>5 days/week) as per doctor's instructions was present in majority (95.3%) of the patients and 82.8% took a modified diet, mostly, as prescribed by the doctor and/or dietician. Only 16 persons (25%) had their eye and foot examination done in the last 1 year. The practices regarding regular exercise for 30 minutes (>5 days/week) and routine (once monthly) blood glucose monitoring were found to be low [Figure 2].

The most common source of information regarding the disease was stated to be health care personnel by 67.15% patients followed by media 18.7%.



Figure 1: Frequency distribution of diabetics according to agreement in their attitude toward diabetes control



Figure 2: Frequency distribution of diabetics according to their self-reported practices

#### Discussion

This preliminary study was conducted with the aim of assessing the sociodemographic profile of patients attending a diabetes clinic in a tertiary care hospital and their knowledge, attitude and practices regarding the disease. The findings of our study revealed that nearly 15% of the patients were illiterate, one-fifth of the males were unemployed and majority of the females were housewives. Overall, it was observed that diabetic patients were aware of only a few aspects regarding the symptoms, complications, prevention and control of their disease condition. Only 34.4% patients knew that the disease could run in families. Regarding symptoms of the disease, knowledge was poor except for that on frequent urination (42.2%).

Regular annual screening for diabetes complications allows treatable diseases to be identified.<sup>[14]</sup> Patients' lack of knowledge about diabetes care can hamper their ability to manage their disease or its complications. Eye complication was stated to be the most common complication of diabetes by 62.5% patients but only 25% patients had gone for eye examination during the last 1 year of their treatment. Awareness on measures to detect early complications of diabetes like periodic eye examination, BP monitoring and awareness on hypoglycemia were found to be poor, which highlights the need for these aspects to be focused in diabetes education programs.

For management of diabetes, majority (81.3%) responded that drugs were used for treatment. Lifestyle interventions, namely nutrition and exercise, are the cornerstones of successful diabetes therapy. Cigarette smoking is associated with poor control of blood glucose and also strongly causally related to hypertension and heart diseases in people with diabetes.<sup>[15]</sup> Our study found awareness on lifestyle modification related to weight control and quitting of smoking was low. Some authors have shown that higher education (16.0 versus 12.0, P <0.0001) and professional or executive jobs (17.0 versus 15.0, P < 0.0001) were significantly associated with a better awareness.<sup>[16]</sup> Other authors have shown that even patients with lower levels of education are well informed on various aspects of diabetes in presence of a well-equipped diabetic clinic with facilities for patient education.<sup>[11]</sup> The poor awareness in our study patients might have been confounded by the fact that majority had low level of education and occupational status in addition to lack of organized diabetes education facilities in our clinic.

Attitude toward regular exercise and dietary modification in diabetics was found to be favorable in the majority; however, while compliance to dietary modification was reported to be high (82.8%) it was not the case with regular exercise (32.8%) possibly due to lack of time. The study found that monitoring of blood glucose at home was very low due to lack of awareness and cost factors but prescription compliance was very high (95.3%).

The findings of this study reveal that diabetic patients rely mostly on drugs and dietary modification to control their disease condition. It is possible that consultation with doctors regarding drugs and dietician was directly responsible in motivating them to adopt such practices. Physicians have an important role to play in the long-term control of the disease and prevention of complications. However, physician barriers like suboptimal knowledge of guidelines, constraints of time and facilities, focus on acute management rather than preventive care, competing care demands and delay in clinical response to poor control impede appropriate management of the disease.<sup>[17]</sup>

For people affected by diabetes, self-management education training is important since people with diabetes and their families provide 95% of their care themselves.<sup>[18,19]</sup> The need for regular patient counseling or group education at followup visits by health care professionals in improving patients' knowledge and ultimately modifying their practices cannot be overemphasized. However, the ground reality is that proper diabetes education programs are lacking in most government hospitals even at the tertiary care levels and the existing programs are weak and fragmented. Inadequacies in primary health care systems which are not designed to cope with additional challenges posed by non-communicable diseases result in poor detection, suboptimal treatment leading to unnecessary disabilities and complications.<sup>[19]</sup> The CURES study concluded that awareness and knowledge regarding diabetes among general population and diabetics are still grossly inadequate in India and massive diabetes education programs are urgently needed both in urban and rural India.<sup>[13]</sup>

Patient education in self-management of the disease is the need of the hour. Special emphasis should be laid on educating the patients about complications of the disease and need for lifestyle modification along with drug compliance and periodic laboratory investigations. An integrated multidisciplinary team comprising a physician skilled in diabetes management, a nurse, dietician, and possibly a pharmacist and a behavioral scientist, can play a vital supportive role in this regard.<sup>[17]</sup>

One limitation of this study was that the findings are restricted to patients attending the diabetic clinic OPD in the selected tertiary care hospital and hence may not be generalizable to patients from different socioeconomic backgrounds in other parts of the country. Additional investigation in a larger sample size in other study populations is needed to replicate and extend these findings. However, since the sociodemographic profile of patients attending an OPD of any government tertiary care hospital in Kolkata is not expected to be very different, this preliminary study throws some light on the prevailing level of knowledge, attitude and practices of diabetics in this area.

This study emphasizes the need for patient counseling and group education at follow-up visits by health care professionals.

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## Appendix

Questionnaire on KAP regarding type 2 diabetes mellitus

Questionnaire number:	Date:
Interview start time:	Interview finish time:

#### Individual consent for the interview

Dear participant,

We are conducting a research in the diabetic clinic in this hospital in order to assess the people's knowledge, attitudes and practices regarding the disease diabetes mellitus type II. We would like to know various things about what you understand in relation to the disease. We are interviewing many patients attending this clinic. The present research will help us to understand the specific informational needs of the diabetic patients and shall be useful for recommending appropriate interventions toward better management of patients with diabetes mellitus.

If you agree with the purpose of the research I will question you about your knowledge, attitude and practices regarding the disease. The survey will take about 20-25 minutes to ask and respond to the questions.

#### **Confidentiality and Consent**

Your answers are anonymous. Your name will not be written on this form, and will never be used in connection with any of the information you tell me. You do not have to answer any questions that you do not want to answer, and you may end this interview at any time you want to. Non-participation in the research does not imply that you will receive a different treatment at the hospital. However, your honest answers to these questions will help us better understand what people think, say and do with regard to diabetes mellitus. There are no wrong or right answers. Your openness and honest answers are extremely important. We would greatly appreciate your help in responding to this survey.

Would you be willing	Yes	No
to participate? ( $$ )		
	~	
Signature of interviewer	Signat	ure of participant
Date:	Date:	
KAP questionnaire on type 2 diabetes mel	litus	
		Section I
11 What is seen as in some lated	~?	

- 1.1. What is your age in completed years?
- 1.2. Mention your sex.
- 1.3. What is your highest level of education completed?
- 1.4.1. Are you currently employed?
- 1.4.2. If yes, what is your main occupation (specify)?
- 1.5.1. Do you have any addiction currently? yes/no
- 1.5.2. If yes, specify the substance.

Male/Female

ves/no

### **Section II**

- 2.0.1. Have you heard about Diabetes Mellitus?
- 2.0.2. If yes, where did you hear about the disease?

Newspaper/magazine
Others (specify)

- 2.0.4. If yes, mention your relationship with him/her.
- 2.1. According to you, what causes diabetes?

2.0.3.

2.2.

Contact with another dia	betic Destiny
Eating more sugar	Others (specify)
Lack/defect of insulir	n Don't know
Which and groups are most for	nmonly offected by disheted

which age groups are most commonly affected by diabetes:			
	Children and adolescents		Others (specify)
	Young adults and middle aged		Don't know

 Middle aged and elderly

 2.3.
 Which sex is/are affected by diabetes?

Males only	Both
Females only	Don't know
 	·

2.4. What is the course of this disease?

	Cures by itself		Others (specify)	
	Short, cured with treatment		Don't know	
	Lifelong, controlled with treatment			
hich	of the following best share stor	inco the	discass conditi	~

2.5. Which of the following best characterizes the disease condition?

High blood sugar	Low urine sugar	
High urine sugar	Oth <mark>e</mark> rs (specify)	
Low blood sugar	Don't know	

2.6. What do you think are the common symptom(s) of diabetes mellitus? (multiple responses possible)

Weight gain/loss	Asymptomatic
Frequent urination	Others (specify)
Frequent hunger	Don't know
Frequent thirst	

2.7. What are the common complication(s) resulting from diabetes mellitus? (multiple responses possible)

Heart disease	Foot problems
Kidney disease	Death
Eye disease	Others (specify)
Stroke	Don't know

2.8. What measure(s) can prevent diabetes? (multiple responses possible)

Healthy diet	Others (specify)
Regular exercise	Don't know
Weight control	Cannot be prevented
Quit smoking	

2.9. What are the methods of treatment in this disease? (multiple responses possible)

Drugs	Quit smoking
Insulin	Others (specify)
Healthy diet	Don't know
Regular exercise	Cannot be treated
Weight control	

2.10.1. Do you think that the complications of diabetes can be prevented by undergoing any routine investigations?

yes/no/don't know

Yes/No

yes/no

2.10.2. If yes, which investigation(s) should be done? (multiple responses possible)

Agree/disagree/don't know

yes/no

yes/no

ves/no

yes/no

yes/no

		Blood sugar		Foot examination
		Monitoring BP		Others (specify)
		Eye examination		Don't know
2.11.1.	Are you	a aware of a condition in wh	ich the ł	blood sugar falls b
2.11.2.	If yes,	mention one common symp	tom of t	his condition?
2.12.1.	Do you	know how to prevent/mana	ge this o	condition?
0.40.0	TC		-	

2.12.2. If yes, mention.

#### Section III

Some patients undertake different lifestyle changes to keep diabetes under control. State your opinion regarding the following statements.

- 3.1. Regular exercise helps in keeping diabetes under control.
- 3.2. People with diabetes should control their weight.
- 3.3. Dietary modification is useful for keeping diabetes under control.
- 3.4. Diabetic patients should abstain from any kind of addiction.
- 3.5. People with diabetes should monitor their own blood glucose at home.
- 3.6 Diabetics can lead near normal life with sugar controlled.
- 3.7. Once diabetes is controlled, eating restrictions are no longer required.
- 3.8. Insulin is the last treatment option and should be avoided as far as possible.

#### Section IV

Mention your own behavior in the last 1 month (1 year where applicable) regarding the following measures.

4.1.1. For the past month, about how often have you taken part in any moderate physical activity lasting more than half an hour (such as yoga, light sports, physical exercise, gardening, taking long walks)?

More than 5 days a week	Two to three times/month
2-5 days a week	Rarely/never
Once a week	

- 4.1.2. If never/rarely state the reason.
- 4.2. How often have you got your blood sugar examined in a laboratory in the last 1 month?

More than once		
Once		
Not measured		

- 4.3.1. Do you use any device to monitor your blood sugar at home?
- 4.3.2. If yes, how often do you check your blood sugar at home?

More than 5 days a week	2-3 times/month
2-5 days a week	Rarely/never
Once a week	

- 4.3.3. If no, state the reason.
- 4.4. How often have you measured your weight in the last 1 month?

More than once
Once
Not measured

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4.5.1. Have you modified your diet as per doctor's/dietician's advice following diagnosis of your disease? yes/no
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4.5.2. If yes, how frequently in the last month did you take your diet as advised by the doctor/dietician?

Mostly
Sometimes
Rarely/never

4.6.1. Did you ever forget to take any drugs prescribed by your doctor?

4.6.2. If yes, mention how many times in the last 1 month?

Never	1-2 days/week
1-3 days/month	More than 2 days

- 4.7. Did you undergo any eye examination in the past 1 year?
- 4.8.1 Did you undergo any foot examination in the past 1 year?
- 4.8.2 Do you always wear covered shoes when outdoors?

We have concluded our interview. Thank you for your patience and kind co-operation.