

# Initial psychological reaction and social support in patients of type 2 diabetes mellitus in Delhi

## Abstract

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**Introduction:** Diabetes Mellitus Type 2 (DM) is a progressive chronic disease which places a significant burden of self-management on the individuals and their families. Negative attitude and lack of social support, particularly from friends and family, are considered the barriers to adherence and self-care. **Objective:** To assess the initial psychological reaction, attitude and social support in patients of Diabetes Mellitus Type 2. **Materials and Methods:** A community based prospective follow up study was conducted in rural and urban areas of Delhi. A total of 98 patients, either known diabetics or those after testing positive with blood-test during screening for diabetes, were selected after systematic random sampling and interviewed using pretested pre-designed questionnaire after 4 months of initial screening survey for diabetes. Data was analysed using SPSS software (version 16). Chi-square and fisher's exact tests were used and accepted statistically significant if *P* value was less than 0.05. **Results:** It was found that more rural patients (56, 88.9%) felt disappointed compared to those residing in urban areas (13, 61.9%), when their families denied them from eating prohibited diet ( $\chi^2 = 13.82$ , *P* = 0.001). Rural families were reported to be more supportive for food and exercise issue ( $\chi^2 = 12.51$ , *P* = 0.001). A higher proportion of patients in urban area (13, 41.9%) compared to rural patients (3, 4.5%) perceived that disease would affect their married life ( $\chi^2 = 22.15$ , *P* = 0.001). However, no significant difference in negative attitude and social support was found during the gender, occupation and education status assessment. **Conclusion:** Psycho-social management of diabetes need to be targeted and addressed. Diabetes management programs should find ways to build and improve social support for patients.

**Key words:** Rural-urban Delhi, self care, social demographic factors, type 2 diabetic mellitus

## INTRODUCTION

Diabetes Mellitus (DM) is a common progressive long-term and non-communicable condition, which places a significant burden of self-management on the affected individuals and their families. The prevalence of all types of diabetes is increasing, with type 2 diabetes growing at epidemic proportions.<sup>[1]</sup> The total number of people with diabetes worldwide was conservatively estimated to increase from 171 million in 2000 to 366 million in 2030.<sup>[2]</sup> India has the distinction of being the diabetes capital of the world, where every fifth diabetic in the world resides.<sup>[3]</sup> The prevalence is only 0.7% for non-obese, physically active rural population and it increases to 11% for obese, sedentary and urban Indians making the average (combined rural and urban) as 8%.<sup>[4]</sup>

Management of diabetes aims at reducing the risk of long term complications such as cardiovascular problems, renal failure, blindness and peripheral neuropathy.<sup>[5]</sup> Self-management or self-care (which is defined as 'activities that individuals, families and communities undertake with the intention of enhancing health, preventing disease, limiting illness and restoring health and are undertaken by lay people on their own behalf either separately or in participative collaboration with health professionals')<sup>[6]</sup> is crucial for achieving and maintaining optimal blood glucose levels and preventing diabetes-related complications. Lack of social support, particularly from friends and family is considered a barrier to adherence and self-care, while high levels of support are related to better long-term management, health outcomes and glucose control.<sup>[7,8]</sup>

In spite of such evidence there are few studies from India to assess the extent of social support of Type 2 Diabetes Mellitus patients. Therefore, this study was planned to assess the social support of patients and elicit their psychological reactions after diagnosis with type 2 diabetes mellitus.

## MATERIALS AND METHODS

### Study design, setting and participants

This was a community based prospective study, conducted in two areas, viz., rural areas comprised of villages namely Barwala adjoining Pooth Khurd and urban area comprising Balmiki Basti, a slum settlement and Vikram Nagar, a resettlement colony in Delhi. In the study, all adult patients suffering from Type 2 Diabetes Mellitus constituted the study population. A total of 98 patients (who were diagnosed diabetic) out of a population of 1205 screened were included in the study (vide infra).

### Methodology

Screening for diabetes was done among 1005 adults in rural and 200 adults in urban area selected by systematic random sampling method. The sample was calculated on the basis of previous recorded prevalence of diabetes in rural population in multicentric study as 3.1% and for urban 7.3%.<sup>[9]</sup> Acceptable lowest prevalence rate for our sample was 2%, so at 95% confidence limit the required sample size was less than 900. Diagnosis was made on the basis of estimation for fasting and postprandial blood glucose (FBG & PPG) using commercial kits using an automated analyzer. Raised fasting and postprandial glucose was taken as the plasma glucose level of more than or equal to 126mg/dL and 200mg/dL respectively, according to the diagnostic criteria of the World Health Organization (WHO). All diagnosed diabetic patients in both rural and urban areas were selected for the study. After the gap of minimum of 4 months (to give time to patients and their families to adjust to the disease), diabetic patients were traced back to collect the data to assess the social support of these newly diagnosed and ongoing (already diabetic) patients. However, 7 patients in urban area could not be traced even after 3 visits. Since, the number of already known diagnosed diabetic patients was less, the analysis was done for total number of diabetic patients. Finally, 31 diabetic patients in the urban area and 67 in rural area were interviewed and their data was analysed.

### Study tool

A pre-tested predesigned questionnaire consisting of items on demographic profile like age, sex, religion, marital status, education, occupation etc and questions to assess their attitude after being diagnosed with diabetes and its impact on their social aspect of health was used to collect data. Questionnaire was translated in local Hindi language and validated by the bi-linguistic experts before the data collection from patients.

The responses were collected on likert scale as “very disappointed”, “slightly disappointed”, and “neutral”, and do not disappointed and so on. But for ease of analysis two broad categories were made;

“disappointed and “neutral/donot disappointed”. Some items have responses as strongly disagreed, slightly disagreed and so on.

### Inclusion and exclusion criteria

All adult patients i.e. aged equal to or more than 18 years suffering from type 2 diabetes mellitus (T2DM) for at least 4 months were included. Seriously ill patient was set as an exclusion criterion but no such patients were observed in the study.

### Statistical analysis

Data was analysed using SPSS software (version 16). Results were presented in simple proportions and difference between groups was assessed using chi-square fisher's exact tests and accepted statistically significant when the error was less than 5%.

### Ethical issues

All patients were explained the purpose of the study and confidentiality was assured to the patients before taking their interviews. A written informed consent was taken from each patient before collecting data. The ethical clearance for the study was obtained from the institutional ethical committee.

## RESULTS

### Demographic profile of participants

Out of 98 patients, 31 (31.6%) were from urban area and 67 (68.4%) were from rural area. In urban area, there were 12 (38.7%) males and 19 females (61.3%) while in rural area; there were 28 (41.8%) males and 39 (58.2%) females who participated in the study. In both urban and rural area, majority were Hindu (74.2% and 97% respectively), married (83.9% and 92.5% respectively), literate (77.4% and 80.6% respectively) and unemployed (71% and 61.2%). In rural area, 14 (20.9%) patients belonged to age group 31-40 years, 21 (31.3%) to 41-50 years, 22 (32.8%) to 51-60 years and 10 (14.9%) belonged to more than 60 years age group. In urban area, 2 (6.5%) patients belonged to age group 18-30 years, 8 (25.8%) to 31-40 years, 5 (16.1%) to 41-50 years, 11 (35.5%) to 51-60 years and 5 (16.1%) to more than 60 years age group. Data was analysed to see difference in responses according to gender. Interestingly, males were more disappointed than females after diagnosis of the disease. It was found that majority of males (77.5%) than females (75.9%) felt disappointed when they were informed by the doctor that they cannot eat certain food items but this association was not found to be statistically significant ( $\chi^2 = 0.35, P = 0.85$ ). Most of the male (80%) and female (89.7%) patients stated that their family members denied them from eating prohibited food. This difference was not significant ( $\chi^2 = 1.80, P = 0.17$ ). Similarly; majority of males (95%) and females (96.6%) felt that they did not think that diabetes could affect sexual relationship with spouse ( $\chi^2 = 0.14, P = 0.7$ ). 28 (70%) males and 39 (67.2%) females reported that people do invite them for parties but did not take care of their diet ( $\chi^2 = 0.08, P = 0.7$ ). Significant differences were noticed when religion was considered as an independent variable. 79.5% of Hindus and 50% of non Hindus were disappointed when informed by doctor that

they cannot eat certain food items, this was statistically significant ( $\chi^2 = 4.36, P = 0.03$ ). 78 (88.6%) Hindus and 6 (60.0%) non Hindu patients reported that their family members used to deny them from eating prohibited food items which was also statistically significant ( $\chi^2 = 6.01, P = 0.01$ ). Interestingly, 15 (17%) of Hindus believed that diagnosis with diabetes will affect chances of getting married but 6 (60%) of non Hindus thought that it will affect chance which is significant ( $\chi^2 = 11.63, P = 0.003$ ). Patients who were less than 40 years than elder age group significantly more (33.3% vs 10.8%) thought that diabetes can affect relationship in a diabetic patient which was statistically significant ( $\chi^2 = 7.39, P = 0.02$ ). Rest of the responses were not statistically significant. The responses were also analysed according to the education status of the patients. It was found that attitudinal and social support characteristics were not found to be associated with the education status [Table 1].

When participants were asked questions about how did they feel when informed by the doctor that they cannot eat certain food items like mangoes and other sugar rich foods, then more participants in urban area responded that they felt disappointed 21 (67.7%) and only few were neutral 10 (32.3%) while in rural area, responses were

disappointed by 54 (80.6%) and neutral by 13 (19.4%). However the difference between these proportions of two groups was not significant ( $\chi^2 = 1.95, P = 0.16$ ). When they were asked if their family members denied them from eating prohibited food, then significantly more ( $n = 63, 94.0\%$ ) rural participants than urban ( $n = 21, 67.7\%$ ) answered positively ( $\chi^2 = 11.961, P = 0.001$ ). Those who answered positively were asked about how they felt at meal time when they were refused certain food items, then in urban area 13 (61.9%) felt disappointed while in rural area same response were given by 56 (88.8%) ( $\chi^2 = 18.7, P = 0.001$ ), i.e., disappointment was significantly more in rural area than urban. Eighteen (58.1%) in urban area and 3 (4.5%) in rural area thought that diagnosis with diabetes may adversely affect the chance of getting married in general but 7 (22.6%) in urban area and 57 (85.1%) in rural area did not feel so which was statistically significant ( $\chi^2 = 42.34, P = 0.001$ ). More rural participants than urban had positive attitude, when asked about their views on whether diabetes can affect relationship in married persons then 13 (41.9%) in urban area and 3 (4.5%) in rural area agreed while 16 (51.6%) and 60 (89.6%) respectively disagreed and this difference was statistically significant ( $\chi^2 = 22.15, P = 0.001$ ). Majority of participants in urban 28 (90.3%) and rural area 66

**Table 1: Responses of study subjects in different groups**

Characteristic	Age		Gender		Education status		Religion		Total N=98 (%)
	Less than 40 years N=24 (%)	More than 40 years N=74 (%)	Male N=40 (%)	Female N=58 (%)	Illiterate N=20 (%)	Literate N=78 (%)	Hindu N=88 (%)	Non Hindu N=10 (%)	
When informed by the doctor that you cannot eat certain food items, how did you feel?									
<i>Disappointed</i>	18 (75)	57 (77)	31 (77.5)	44 (75.9)	15 (75.0)	60 (76.9)	70 (79.5)*	5 (50.0)*	75 (76.5)
Does your family member deny you from eating prohibited food?									
Yes	19 (79.2)	65 (87.8)	32 (80.0)	52 (89.7)	16 (80)	68 (87.2)	78 (88.6)*	6 (60.0)*	84 (85.7)
If yes, How did you feel?									
<i>Disappointed</i>	14 (73.6)	55 (84.6)	27 (84.3)	42 (80.7)	13 (81.2)	56 (82.3)	65 (83.3)*	04 (66.6)*	69 (82.1)
Do you think diagnosis with diabetes mellitus may adversely affect the chance of getting married?									
Yes	7 (29.2)	14 (18.9)	8 (20.0)	13 (22.4)	4 (20.0)	17 (21.8)	15 (17.0)*	6 (60.0)*	21 (21.4)
Do you think that for a married person, Diabetes can affect relationship?									
Yes	8 (33.3)*	8 (10.8)*	7 (17.5)	9 (15.5)	4 (20.0)	12 (15.4)	12 (13.6)	4 (40.0)	16 (16.3)
Do you think that Diabetes can affect sexual relationship with spouse?									
Yes	2 (8.3)	2 (2.7)	02 (5.0)	2 (3.4)	1(5.0)	3 (3.8)	03 (3.4)	1 (10.0)	4 (04.1)
Do you think people may ridicule a person with Diabetes?									
Yes	4 (16.7)	15 (20.3)	08 (20.0)	11 (19.0)	2 (10.0)	17 (21.8)	17 (19.3)	12 (17.9)	19 (19.4)
Do you think that people invite you for parties but do not take care of your diet?									
Yes	20 (83.3)	47 (63.5)	28 (70.0)	39 (67.2)	17 (85.0)	50 (64.1)	59 (67.0)	8 (80.0)	67 (68.4)
After getting diagnosed with diabetes, do your children accuse you for their inheriting this disease which can be transmitted to them?									
Yes	1 (4.2)	8 (10.8)	5 (12.5)	4 (6.9)	1 (5.0)	8 (10.3)	7 (8.0)	2 (20.0)	9 (9.2)
What your family and friends do over food and exercise issue?									
<i>They are supportive</i>	17 (70.8)	63 (85.1)	35 (87.5)	45 (77.6)	16 (80.0)	64 (82.1)	73 (83.0)	7 (70.0)	80 (81.6)
Would you like to join any supportive group where you can meet others suffering from diabetes?									
Yes	15 (62.5)	50 (67.6)	30 (75.0)	35 (60.3)	14 (70.0)	51 (65.4)	58 (65.9)	7 (70.0)	65 (66.3)

\*Figures given in bold are statistically significant ( $P < 0.05$ )

(98.5%) reported that they didn't think that diabetes could affect sexual relationship with spouse and this difference was not significant ( $\chi^2 = 3.62, P = 0.05$ ). Nineteen (61.3%) in urban area and 61 (91%) in rural area, said that their family and friends were supportive over food and exercise issue which was found to be significant association ( $\chi^2 = 12.51, P = 0.001$ ). 21 (67.7%) participants in urban area and 44 (65.7%) in rural area wished to join any supportive group where they could meet others of their own age suffering from diabetes ( $\chi^2 = 0.04, P = 0.84$ ), i.e., in both areas people were willing to have supportive group.

Attitudinal and social support characteristics were also analysed according to employment status of the patients, it was seen that 46 (73%) of unemployed and 29 (82.9%) of the employed participants felt disappointed when they were informed by the doctor that they cannot eat certain food items. Difference in these proportions was not statistically significant ( $\chi^2 = 1.21, P = 0.27$ ). Similarly, other responses were not significantly different in occupational groups.

Difference in same variables was also analysed according to marital status (married and widow/separated/unmarried) of the patients and monthly per capita income (less than or equal to Rs. 6000 and more than Rs.6000) in which none of the responses were statistically significant. Results are shown in Table 2.

## DISCUSSION

In the study, prohibition by family members for food restricted for diabetics was more in patients from rural than urban area, showing their concerns. However, literature shows that restricting diet may put pressure and given rise to the reaction of bewilderment on already stressed patient.<sup>[10]</sup> This was also shown in our study, diet restriction was more detrimental on patients in rural area because more rural patients than urban (73% vs. 28.6%) felt disappointed. Although, some studies have already documented that role of family members is considered a significant source of social support for adults with diabetes.<sup>[11,12]</sup> Anderson *et al.*, (1981) did a study

**Table 2: Responses of study subjects in different groups**

Characteristic	Marital status		Residence		Occupation		Per capita income (in INR)		Total N=98 (%)
	Married N=88 (%)	Unmarried/widow/seperated N=10 (%)	Urban N=31 (%)	Rural N=67(%)	Unemployed N=63 (%)	Employed N=35 (%)	less than or equal to 6000 N=86 (%)	More than 6000 N=12 (%)	
When informed by the doctor that you cannot eat certain food items, how did you felt?									
<i>Disappointed</i>	65 (73.9)	10 (100.0)	21 (67.7)	54 (80.6)	46 (73)	29 (82.9)	68 (79.1)	07 (58.3)	75 (76.5)
Does your family members deny you from eating prohibited food?									
Yes	76 (86.4)	08 (80.0)	21 (67.7)*	63 (94.0)*	53 (84.1)	31 (88.6)	72 (83.7)	12 (100.0)	84 (85.7)
If yes, How did you feel?									
<i>Disappointed</i>	61 (80.2)	08 (100.0)	13 (61.9)*	56 (88.8)*	43 (81.1)	26 (83.8)	61 (84.7)	08 (66.7)	69 (82.1)
Do you think diagnosis with diabetes mellitus may adversely affect the chance of getting married									
Yes	18 (20.5)	03 (30.0)	18 (58.1)*	3 (4.5)*	12 (19.0)	9 (25.7)	17 (19.8)	4 (33.3)	21 (21.4)
Do you think that for a married person, Diabetes can affect relationship?									
Yes	14 (15.9)	2 (20.0)	13 (41.9)*	3 (4.5)*	8 (12.5)	8 (22.9)	14 (16.3)	2 (16.7)	16 (16.3)
Do you think that Diabetes can affect sexual relationship with spouse?									
Yes	04 (4.5)	0 (0.0)	03 (9.7)	1 (1.5)	1 (1.6)	3 (8.6)	3 (3.5)	1 (8.3)	4 (04.1)
Do you think people may ridicule a person with Diabetes?									
Yes	17 (19.3)	2 (20.0)	07 (22.6)	12 (17.9)	15 (23.8)	4 (11.4)	16 (18.6)	3 (25.0)	19 (19.4)
Do you think that people invite you for parties but do not take care of your diet?									
Yes	58 (65.9)	9 (90.0)	20 (64.5)	47 (70.1)	42 (66.7)	25 (71.4)	60 (69.8)	7 (58.3)	67 (68.4)
After getting diagnosed with diabetes, do your children accuse you for their inheriting this disease which can be transmitted to them?									
Yes	9 (10.2)	0 (0.0)	4 (12.9)	5 (7.5)	6 (9.5)	3 (8.6)	7 (8.1)	2 (16.7)	9 (9.2)
What your family and friends do over food and exercise issue?									
<i>They are supportive</i>	73 (83.0)	7 (70.0)	19 (61.3)*	61 (91)*	50 (79.4)	30 (85.7)	69 (80.2)	11 (91.7)	80 (81.6)
Would you like to join any supportive group where you can meet others suffering from diabetes?									
Yes	59 (67.0)	6 (60.0)	21 (67.7)	44 (65.7)	38 (60.3)	27 (77.1)	55 (64.0)	10 (83.3)	65 (66.3)

\*Figures given in bold are statistically significant ( $P < 0.05$ )

among adolescents in which they found that adolescents who have more supportive families have better metabolic control of diabetes than those who do not.<sup>[13]</sup> In present study, family members did not discriminate gender of their patients for denying eating prohibited food items. Such kind of family support is consistent with the findings of a study conducted in USA by Mayberry *et al.*, in 2012.<sup>[14]</sup> On the issue of exercise, rural group got more attention (91%) of family members against 61.5% in the urban counterparts that could be due to the stronger kinship and joint family system in rural areas.

In both rural and urban areas, majority of patients thought that suffering from diabetes does not affect relationships. Similarly, majority of patients responded they don't think diabetes affect sexual relationship with spouse. However, Primomo *et al.*, in 1990 highlighted in their study that although, support from one's spouse was found to be the most important source of support during illness episodes but disruptions in the marital relationship often occur when one partner has a chronic illness.<sup>[15]</sup> Further, Katz in a study showed that the self-management behaviour of husbands with diabetes often deteriorates when conflict exists with their wives.<sup>[16]</sup> However, in the present study we have not studied the conflict and in majority of subjects the duration of illness after diagnosis (minimum of 4 months) was too short to comment, although some studies have found association between duration of diabetes with social support.<sup>[17]</sup> Also, no difference was observed when marital status was analysed.

Although; Fekete *et al.*, in their study in 2007 suggested that couples who are able to meet each other's emotional needs may experience better adjustment when coping with chronic illness.<sup>[18]</sup> More males than females felt disappointed when they were told by their doctor that they cannot eat certain food items. However, their family members equally behave with them to prohibit eating certain food items and also supported them over food and exercise issue. When family support is good then outcome is also good. There was no patient in the study group who had complication. A recent study in the U.K. found that a single program of 6 hours duration for only people with newly diagnosed type 2 diabetes mellitus and not involving their families showed no difference in biomedical or lifestyle outcomes at 3 years,<sup>[19]</sup> this may point towards the importance of involving family members in diabetes management. Religion also have an impact on social support where significantly higher percentage of family members of Hindus patients used to deny them from eating prohibited food than non Hindus. While majority of Hindus thought that diabetes does not affect chances of getting married, majority of non Hindus thought that diabetes does affect chances of getting married which could be due to prevalent beliefs in two communities.

The present study indicates that there was no significant difference in responses when these were analysed according to education status of the diabetic patients. Similarly; occupation and per capita income of the diabetic patients did not associate with their perception about reaction of family members. Although more

employed than unemployed felt disappointed when they were restricted to certain food items. Employed patients are expected to concern about their health status because that can affect their prospect of employment. Majority of patients in both the areas wanted to join a supportive group for diabetic patients. It is evident in literature too that efficient support system is required at every level, which can provide the patient contentment in place of frustration, which is neither expensive (majority of patients were unemployed) nor beyond understanding. Since, data was not collected on the effect of the emotional status and family support on complications of diabetes, this aspect could not be assessed which is a limitation of the study.

## CONCLUSION

Psychological reaction of T2DM patients and their social support are associated with some socio-demographic factors such as place of residence, gender, employment that need to be addressed while preparing diabetes control program. Diabetes management should focus on building social support for patients to enhance their adjustment with the disease. In self management, family and friends of diabetic patients should also be involved. However, further research is needed to find their role in comprehensive management of diabetes.

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