Original Research Article

Social factors influencing diabetes mellitus in adults attending a tertiary care hospital in Nagpur: a cross sectional study

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ABSTRACT

Background: Social determinants of the health are the conditions in which individuals are born, grow, live and age. Increasingly, these are being recognized for their relationship to the soaring incidence of diabetes mellitus. So, we conducted a study to find the social factors of diabetes mellitus.

Methods: A cross sectional study was conducted in adults having type 2 diabetes in outpatient department of tertiary care institute in Nagpur from July to September 2015. Socio demographic factors, health care access factors, stress related factors and self-care behavior of these patients were studied. Data was analyzed using Epi Info 7.1 software.

Results: Out of 140 diabetic patients studied females were predominant (55.71%). Most of them were married (92.85%), were Muslim by religion (47.14%), were from nuclear families, (53.57%) and lower middle class (40%). 50% said that they have health care facilities nearby their house and 50.71% do not get drugs regularly in that health care facility. and only (27.14%) were insured. 64.28% of study subjects said that they were accompanied by relatives to hospital. The financial stress (73.57%) and family stress (72.85%) was more in the patients than work stress (49.28 %). 75.72% and 71.42 % checked their blood sugar levels every 6 monthly and blood pressure every monthly and very less patients kept follow up for complications.

Conclusions: Our study showed that in spite of having health care facility nearby, the irregularity of drugs was a major concern. Very less study subjects were insured for their health, this implicates higher stress related factors. They had less compliance towards follow-up of complications of diabetes mellitus.

Keywords: Diabetes mellitus, Health access, Self-care behaviour factors, Social factors

INTRODUCTION

Epidemiological transition has led to rise of new diseases like obesity, diabetes and related metabolic disorders.[1-3] Among these, diabetes mellitus constitutes the major share. Diabetes in all its forms imposes unacceptably high human, social and economic costs on countries at all income levels. According to World Health Organization estimates, Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980. The global prevalence (age-standardized) of diabetes has nearly doubled since 1980, rising from 4.7% to 8.5% in the adult population. About 1.5 million deaths have been attributed to this deadly disease. This burden is rising fastest among the low and middle-income countries like India.[4] The onset of diabetes among Indians occurs a decade earlier than compared to the western world.[5,6] Improved health care, early detection, and timely treatment is another effective approach for reducing impact of diabetes. Access to adequate health care plays an even stronger role in controlling diabetes, preventing the development of complications, and avoiding diabetes-

related mortality. Apart from medical factors affecting, some social, economic and psychological factors also influence the outcome of diabetes mellitus. Some direct economic factors like cost of insulin, and oral hypoglycemic drugs, cost of health insurance and cost of health care and indirect factors like loss of work and economic wages also bring about substantial impact.[7,8]

There is paucity of data in this domain of epidemiology of diabetes mellitus. So, this study was conducted to study the social factors influencing diabetes mellitus in the patients attending a tertiary care hospital in Nagpur.

METHODS

A cross-sectional study was conducted in outpatient department of tertiary care hospital in Nagpur. This study was conducted from July to September 2016. Eligible participants were provided written informed consent prior to their participation. Data was collected after approval of institutional ethical committee.

A study conducted by Indian Centre for Medical Research found the prevalence of type 2 diabetes in Maharashtra state as 9.4 %.[9] Using this prevalence, with 95% confidence interval and 5% absolute precision the minimum sample size calculated was 109.

Considering a non-response rate of 20%, we collected the data from 140 study subjects. Convenience sampling was done. The study subjects were patients of diagnosed diabetes mellitus type 2 in the past 5 years. The subjects who gave consent were included in the study.

Data was collected by predesigned and pretested questionnaire which included socio demographic characteristics like gender, religion, marital status, educational status, occupation, type of family and socioeconomic status.

Some health care utilization factors like availability of health care facility nearby, regularity of drugs in that health care facility, availability of family doctor, accompany of relative while going to hospital, health insurance etc. and knowledge about self-care in diabetes and stress related factors were also included in the questionnaire. Socio economic status was classified based on modified B G Prasad classification.[10]

Statistical analysis

The data was collected and compiled using Epi Info Version 7.1. The quantitative variables were expressed in terms of number and percentage and the qualitative variables were expressed in proportions.

RESULTS

We included total of 140 study subjects in our study.

Table 1: Sociodemographic characteristics of the study population.

Sociodemographic characteristics	Number	%
Gender		
Male	62	44.29
Female	78	55.71
Marital status		
Married	130	92.85
Unmarried	10	7.15
Religion		
Hindu	60	42.85
Muslim	66	47.14
Sikh	1	0.73
Buddha	13	9.28
Type of family		
Three generation	18	12.86
Joint	47	33.57
Nuclear	75	53.57
Socioeconomic status		
Upper class	4	2.85
Upper middle class	48	34.28
Middle class	29	20.71
Lower middle class	56	40.00
Lower class	3	2.14

Table 1 shows distribution of study subjects according to sociodemographic characteristics. Out of 140 diabetic patients studied females were predominant 78 (55.71%). An overwhelming majority of our sample were married 130 (92.85%). 66 (47.14%) were Muslim by religion followed by 60 (40.85%) were Hindus. More than half of the respondents 75 (53.57%) were from nuclear families. and 56 (40%) were from lower middle class.

Table 2: Distribution of study subjects according to stress related factors.

Stress related factors	Yes Number (%)	No Number (%)
Financial stress	103 (73.57)	37 (26.43)
Family stress	102 (72.85)	38 (27.15)
Work stress	69 (49.28)	71 (50.72)

Out of 140 diabetic patients 103 (73.57%) have financial stress and 37 (26.43%) did not have financial stress. Family stress was seen in 102 (72.85%) patients. Work stress was seen in 69 (49.28%). It was seen that majority of diabetic patients have financial stress and family stress though the work stress was found to be less.

Table 3 shows distribution of study subjects according to health access factors. 70 (50%) said that they have health care facilities nearby their house and 71 (50.71%) do not get drugs regularly in that health care facility. and only 38 (27.14%) were insured, rest 102 (72.85%) were not insured. 90 (64.28%) of study subjects said that they were

accompanied by relatives to hospital. Majority of them 118 (84.28%) don't have family doctor.

Table 3: Distribution of study subjects according to health access factors.

Health access factors	Yes Number (%)	No Number (%)
Do you have health care facility within 5km of your house?	70 (50)	70 (50)
Do you get the drugs regularly?	69 (49.29)	71 (50.71)
Does any relative accompany with you during your hospital visit?	90 (64.28)	50 (35.72)
Do you have family doctor?	22 (15.72)	118 (84.28)
Do you have health insurance?	38 (27.14)	102 (72.85)

Table 4: Distribution of study subjects according to self-care behaviour factors.

Self-care behavior factors	Yes Number (%)	No Number (%)
Do your blood sugar level get checked every 6 monthly?	106 (75.72)	34 (24.28)
Do your blood pressure get checked every monthly	100 (71.42)	40 (28.58)
Do you check your blood cholesterol levels every 6 monthly?	5 (3.57)	135 (96.43)
Do your kidney function test get checked every 6 monthly?	1 (0.2)	139 (99.28)
Do your eyes get checked for complications of diabetes every year	23 (16.41)	117 (83.57)

Table 4 shows Distribution of study subjects according to self-care behavior factors. It was seen that 106 (75.72%) and 100 (71.42 %) checked their blood sugar levels every 6 monthly and blood pressure every monthly and very less patients kept follow up for cholesterol level, kidney function and eye complications.

DISCUSSION

Social determinants of health are the conditions in which the individuals are born, grow, live, work and age.[11] This cross-sectional study was conducted to study the social factors influencing the patients attending outpatient department of a tertiary care centre in Nagpur, Maharashtra.

A study by De Silva AP et al inferred that as the income of the family increases, the proportion of diabetes mellitus and impaired glucose tolerance increases and this trend was statistically significant.[12] In our study majority of the study subjects were in upper middle class and middle class and very few in upper class. This can be due to the catchment population of a government tertiary care centre is for middle and lower classes of the society. Another study by Tol A et al had a significant inverse association between the educational status of the population and the risk of complication in diabetic patients.[13]

A study by Selvaraj K et al found that 78.8% of the study subjects got themselves checked for their blood sugars in last 3 months.[14] In our study 75.72% were having blood sugar follow up every 6 months since their diagnosis. Another study by Ahmed S et al found that the proportion of population coming for follow up for blood sugar checkup was 4.8%, 17.7%, 23.4% and 54% respectively after 15 days, 1 month, 3 months and ≥6 months.[15]

Further, only 20.2% of the people had follow up for their eye examination annually. In our study 16.41 % had follow up for eye examination for the complications of diabetes. In our study, 15.72% of the study subjects said that they had family doctors in case of emergencies. This reflects more education to be needed for the patients regarding the follow up for risk of complications.

A literature review done by Hackett RA et al studied that the stress has a significant role in etiology of type 2 diabetes mellitus and as prognostic factors in existing patients. In our study, almost three fourths of study subjects had family and financial stress and half of them had work stress.[16-18]

Diabetes mellitus is disease of many complications affecting each and every organ of the body. There will be many direct and indirect costs of care during the course of disease. A study by Grover S et al inferred that the total direct costs over last 6 months were Rs 4966.42 (SD- Rs 4270.42) and the indirect costs in last 6 months were Rs 2086.74 (SD- Rs 5050.03).[19]

Another study by Ramachandra A, studied the average expenditure on the health care by the patient during the course of disease.[20] On an average the expenditure was Rs 7505 (400 to 75200), Rs 3310 (360 to 48,600), and Rs 13880 (550 to 75200) respectively for inpatient care, outpatient care and surgical care in diabetes.

In our study, 27.14% had health insurance coverage for their disease. Further, they also found that the proportion of income spent on the cost of care in diabetes patients was 17.5%, 7.7% and 16.3% respectively for inpatient

care, outpatient care and surgical care. This reflects the need for health care to be insured by the population and steps to be taken by the government to subsidize the insurance so that poorest population should get access for quality health care for non-communicable diseases like diabetes mellitus.

A study by Tol A et al inferred that 50% of the study subjects had experienced the sense of security by their family members during visit to hospital.[13]

In our study 64.63% study subjects said that they were accompanied by family members or relatives during their visit to the hospital. Further Tol A et al inferred that 47.4% of the study subjects in their study had face to face interaction with family members about the disease. The support from family and relatives forms a crucial role in overall improvement of the disease.[13] There were certain limitations of the study.

The questions of stress related factors were in Yes or No format. Scales for assessing stress would have gained more precise results. Since it was a hospital based study, there exists a bias of selection of study subjects. In spite of these limitations, the study added to the knowledge of the follow up rates for each of the investigations for complications of diabetes and it gave an overview of the social factors influencing the patients with diabetes mellitus.

CONCLUSION

Our study showed that in spite of having health care facility nearby, the irregularity of drugs was a major concern. Very less study subjects were insured for their health, this implicates higher financial and family stress. They had less compliance towards follow-up of complications of diabetes mellitus. Health system need to be further strengthened to deliver an effective, reliable and affordable package of intervention and services for people with diabetes.

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