Original Research Article

Assessment of the contributing risk factors in adult diabetic patients attending the diabetic clinic in Bankura Sammilani Medical College, Bankura

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ABSTRACT

Background: Diabetes affects all segments of the population and is one of the leading causes of premature morbidity and mortality and requires life-long healthcare services. The National Rural Health Mission launched in 2005 and the new pilot National Programme for Prevention and Control of Diabetes, Cardiovascular diseases and Stroke offer opportunities for improving care for diabetes and other non-communicable diseases through service provision at the primary and secondary levels of care. This article describes the health services related factors and ascertains the physical status of adult diabetic patients.

Methods: It is an institution based, cross-sectional, descriptive study. Complete enumeration of all patients attending diabetic clinic of Bankura Sammilani Medical College and hospital, Bankura, West Bengal was done. Eligible consenting adult patients, who were diagnosed as a case of diabetes and on treatment were interviewed with review of medical record. The study was preceded after obtaining ethical clearance. Data were entered in MS Excel spread sheet. Calculation was done with the help of software SPSS 22.0 free version.

Results: Only 5.3% of study subjects had drug supply from hospital fully but rest of them had to buy from the shop. 79.3% of study subjects skipped the drug when it was finished. Diabetic complication was found to be more when distance of home from hospital was more.

Conclusions: Antidiabetic drug were not regularly available in hospital so all most all had to purchase drug from the shop when not available at hospital.

Keywords: Adult diabetic, Complications, Co-morbidity, Drug availability, Drug compliance

INTRODUCTION

Diabetes is a non-communicable metabolic disease characterized by hyperglycemia (high circulating blood glucose) resulting from defects in insulin secretion, insulin action, or both. The current WHO diagnostic criteria for diabetes is fasting plasma glucose ≥7.0 mmol/l (126 mg/dl) or 2 hour plasma glucose ≥11.1 mmol/l (200 mg/dl).[1]

Diabetes is traditionally known as a "silent disease," exhibiting no symptoms until it progresses to severe

target organ damage. Case detection, therefore, requires active and targeted screening efforts.[2] International Diabetes Federation (IDF's) most recent estimates indicate that 8.3% of adults, 382 million people have diabetes, and the number of people with the disease is set to rise beyond 592 million in less than 25 years.[2] According to the diabetes atlas 2006 published by the IDF 5th edition, the number of people with diabetes in India currently around 40.9 million is expected to rise to 69.9 million by 2025 unless urgent preventive steps are taken.[2] Yet, with 175 million of cases currently undiagnosed, a vast amount of people with diabetes are progressing towards complications unawares. Approximately 5.1 million people aged between 20 and 79 years died from diabetes in 2013, accounting for 8.4% of global all-cause mortality among people in this age group.[2]

Demographic transition, combined with urbanization and industrialization, has resulted in drastic changes in lifestyles globally. Consequently, lifestyle-related diseases like diabetes have emerged as major public health problems in the developing countries.[3] Diabetes affects all segments of the population and is one of the leading causes of premature morbidity and mortality and requires life-long healthcare services. The levels of knowledge about diabetes among the at-risk population and among those who suffer from the disease are poor. About 90% of all respondents did not test their blood glucose regularly and suffered from several complications with low medication adherence and poor clinic attendance. Information on the availability, cost, and quality of medical care for diabetes is generally not available.[4]

The National Rural Health Mission launched in 2005 and the new pilot National Programme for Prevention and Control of Diabetes, Cardiovascular diseases and Stroke offer opportunities for improving care for diabetes and other non-communicable diseases through service provision at the primary and secondary levels of care.[5,6] Guidelines for the management of type 2 diabetes mellitus in the Indian context have also now been developed through a joint consultation by the Indian Council for Medical Research and WHO in 2005.[7] Based on this fact objective of study was to describe the socio-demographic, economic, lifestyle and health services related factors and to ascertain the physical status of adult diabetic patients attending the diabetic clinic of Bankura Sammilani Medical College, Bankura.

METHODS

An institution based, cross-sectional, descriptive study was done in diabetic clinic situated in ground floor of Bankura Sammilani Medical College and hospital, Bankura, West Bengal. Total duration of study was of 20 months from May 2014 to December 2015. Diabetic clinic in B.S. Medical College runs once in a week on every Thursday and approximately 20 to 30 patients attend the outpatient department (OPD) day per week. Patients who were diagnosed as a case of diabetes in

private clinic or other department of the B.S.M.C and hospital and/or on treatment on anti-diabetic drugs were enrolled as a new patient in diabetic clinic on first visit of the patient in diabetic clinic. Adult patients (≥18 years of age) attending diabetic clinic and who were diagnosed as a case of diabetes at least 1 year back and were on treatment were the study subjects. All eligible patients who gave informed or verbal consent attending the diabetic clinic were taken in the study during data collection period. Gestational diabetes, seriously ill point and those who did not give consent were all excluded from the study. On an average of 5-6 patients were newly enrolled in register per week on diabetic clinic. Sample size of 180-216 patients for study were taken during data collection period. During data collection period 200 patients were newly enrolled in the diabetic clinic but data were collected by 150 study subjects only. Complete enumeration of all eligible patients attending the diabetic clinic during the data collection period was taken as study population.

Data collection

The study was preceded after obtaining ethical clearance from the institutional ethics committee and diabetic clinic under Medicine Department. Study tools were pre-tested, pre-designed interviewer administered questionnaires containing both open and close ended question (in Bengali language), digital weighing machine (adult), portable anthropometric rod and medical records. Language validation of schedule questionnaires was done by group of experts. Pretesting of schedule was done in 20 patients attending medicine OPD and those are excluded from the final data collection. Any difficulty that arose during pretesting was corrected in the final questionnaires. The study was done by collecting data by three ways: interview of the adult diabetic patients with the help of the pre-tested, pre-designed and interviewer administered questionnaires, record review was done by checking the medical record and anthropometric examination for the assessment of body mass index (BMI).

Statistical analysis

Data were entered in MS Excel spread sheet. Calculation was done with the help of software SPSS 22.0 free version and MS Excel. Descriptive statistics were expressed by mean, SD and proportion for socio-demographic, lifestyle and health service-related factors characteristics, diabetes complications. Relationship between socio-demographic and diabetes complication was calculated by using appropriate statistical tests. P value ≤0.05 was significant with 95% confident interval.

RESULTS

Proportion of male was relatively more than female in 31-40 years and 41-50 years age group whereas proportion of female was relatively more than male in 51-60 years and in >60 years age groups. The mean age of female was

50.00±12.69 years and of male was 52.40±12.64 years respectively. Overall proportion of female (51.30%) was more than males (48.70%) in this study shown in figure 1. Majority of adult diabetic patients belongs to age group between 51-60 years (32.7%) followed by 41-50 years and more than 60 years age groups.

Majority of subjects belonged to Hindu (86.7%) followed by only 13.3% of Muslim. Majority of study subjects belonged to general caste (46.0%) followed by scheduled caste (29.3%), other backward classes (17.3) and scheduled tribe only 7.3%. Majority of study subjects were illiterate (44.0%) followed by middle and primary education (38.6%). Only 8.0% of subjects were educated up to graduate or above. Majority of study subjects belonged to home maker (38.0%) followed by (34.7%) skilled and unskilled workers. Only 10.0% of subjects were in service. 54.7% of study subjects belonged to Class V and 21.3% of Class IV while only 6.7% were in Class I. Among the study subjects the proportion of joint families was more (53.3%) than that of nuclear family (46.7%). 68.0% of the study subjects had Above Poverty Line card and 32.0% had Below Poverty Line card. Socio-demographic profile of study subject was shown in Table 1.
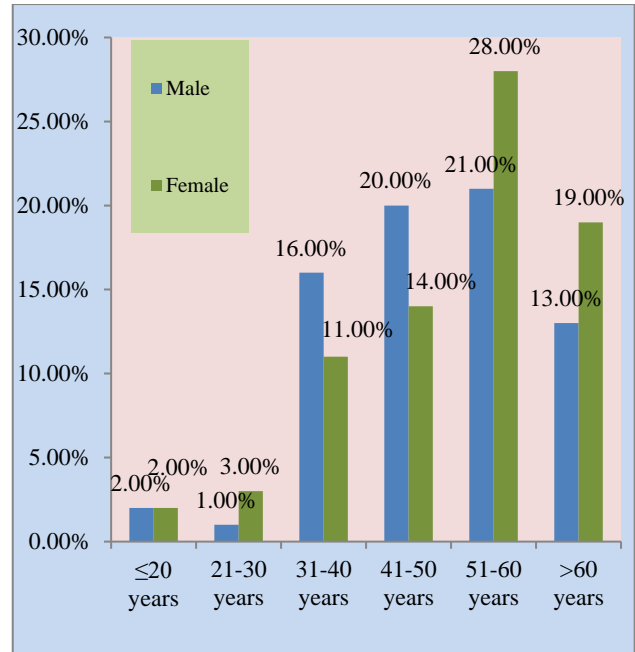

Figure 1: Age wise distribution of study subjects according to sex (n=150).

Table 1: Distribution of study subjects according to socio-demographic profile (n=150).

Socio-demographic characteristics		Number	%
Religion	Hindu	130	86.7
	Muslim	20	13.3
Caste	General	69	46.0
	Other backward classes	26	17.3
	Schedule caste	44	29.3
	Schedule tribe	11	7.3
Educational status	Illiterate	66	44.0
	Primary+middle	58	38.6
	High school+higher secondary	14	9.3
	Graduate and above	12	8.0
Occupation	Home maker	57	38.0
	Unemployed	26	17.3
	Skilled and unskilled worker	52	34.7
	Service	15	10.0
Socioeconomic status*	Class I	10	6.7
	Class II	11	7.3
	Class III	15	10.0
	Class IV	32	21.3
	Class V	82	54.7
Type of family	Nuclear	70	46.7
	Joint	80	53.3
Poverty level	Below poverty line	48	32.0
	Above poverty line	102	68.0

*Modified BG Prasad's Scale, January 2014.

70.0% of study subjects had physical activity of sedentary type followed by 30.0% of moderate physical activity. None had physical activity of severe type. 80.6% of study subjects had good drug compliance whereas 19.4% had poor drug compliance. 52.0% of study subjects had irregular supply of drug from hospital whereas 48.0% of subjects had regular supply of drugs.

Only 5.3% of study subjects had supply of drug from hospital fully but rest of them had to buy the drug from the shop. 50.0% had to buy all the antidiabetic drugs from the shop and 44.7% were dependent both on shop and hospital for antidiabetic drug shown in Table 2.

Table 2: Distribution of study subjects according to sources of drugs availability (n=150).

Sources of availability of drug	Number	%
Hospital	8	5.3
Medicine shop	75	50.0
Hospital and shop	67	44.7
Total	150	100.0

79.3% of study subjects skipped the drug when it was finished while 20.7% of them buy the drug from the shop.

69.3.0% of study subjects were involved in physical activities/exercise whereas 30.7% of them did not had any physical activities/exercise. Majority of study subjects (52.0%) did physical activity for less than 150 minutes in a week while 48.0% did it for longer duration. 45.3% of study subjects were currently addicted to substance abuse.

Majority of study subjects (60.3%) were addicted to smokeless tobacco followed by smoking in 23.6% of subjects, 5.9% for both smoking and smokeless, 4.4% only alcohol and 2.9% for both smoking and alcohol and for all type of addiction.

Diabetes was diagnosed in 6.0% of study subjects below 20 years of age. The proportion of diagnosed case of diabetes increased up to 50 years of age and then decreased. The mean age of diagnosis of diabetes was 45.92±13.58 years in study subjects, median age of diagnosis was 47.0 years, but range was varied from 14-87.5 years.

Majority of study subjects attending the diabetic clinic had 1-5.99 years (67.3%) of duration of diabetes followed by 19.3% for 6-10.99 years of duration of diabetes and only 13.3% of subjects had more than 11 years of duration of diabetes. The mean year of duration of diabetes was 5.43±5.60 years.

20.7% of the study subjects were found to be pre-obese-at risk. 14.7% of subjects were in Obese I and 3.3% as Obese II group. Nearly 30.0% of the subjects were underweight and normal according to their BMI as per Body Mass Index Asian Indian classification.

All the study subjects are of non-vegetarian diet. 96.7% of the subjects consumed green leafy vegetables more than 4 days per week. 73.3% of subjects did not eat fruits and 18.0% ate for 2-3 days per weeks. 54.0% of subjects consumed salad for more than 4 days per week. 11.0% of subjects consumed sweet. 100.0% of subjects did not consume ghee/butter and cold drinks. Only 4.7% of the subjects consumed red meat for 2-3 days per week. Only 6.7% of the subjects did not consume fish. 58.0% of the subjects consumed chicken for 2-3 days per week.

Proportion of comorbid conditions present along with diabetes was 54.7% for hypertension, followed by dyslipidemia (7.3%), arthritis (5.3%), cardiac disease (4.7%), thyroid disease (2.7%), cataract (2.7%) and least for stroke (2.0%).

Proportion of complications of diabetes was mostly due to neuropathy (20.0%), followed by gastropathy (8.0%), nephropathy (5.3%), foot ulcer (4.0%) and least by retinopathy (2.7%). Diabetic complication was more in female (35.6%) than in male (32.5%) and the difference was statistically not significant.

Diabetic complication was found to be more in female in this study but not significant. Caste, educational status, occupation, socioeconomic status, BMI, nature of physical activity, drug compliance, current addiction, duration of diabetes, comorbidity showed statistically non-significant association with the diabetes complication but statistically significant association found between distance of hospital from home and diabetes complication.

Subjects with median distance more than 28 km from home to hospital having diabetic complication was 44.0% than that of subjects with median distance less than 28 km was 24.0% and the difference was statistically significant.

Proportion of subjects with duration of diabetes more than 10 years having diabetic complications was 45.0% which was more than in subjects with 5-10 years duration and 1-5 years duration respectively with 37.9% and 30.7% and the differences was statistically not significant.

Subjects with comorbid conditions having diabetes complications was 36.7% than subjects without comorbid conditions 28.2% and the difference was statistically not significant.

Comorbid diseases were more among those with distance of hospital from home with more than 28 km (66.7%) than those with distance of hospital from home less than 28 km (64.0%) and the difference was statistically significant.

DISCUSSION

In this study 150 adult diabetic patients attending the diabetic clinic were interviewed and anthropometric examinations were done in the data collection period. In this study physical assessment was done by comparing with diabetes complication and comorbid diseases. Physical association was seen with socio-demographic characteristics, lifestyle and health service-related factors, utilization of health facilities and among themselves also.

Proportion of female (51.3%) was more than male (48.7%) in present study and similar finding was found in study done in Saudi Arabia.[8] In present study proportion of male was relatively more than female in 31-40 years and 41-50 years age group whereas proportion of female was relatively more than male in 51-60 years and also in >60 years of age groups. Proportion of diabetes in male shows majority in 21-30 years age group (75.0%). Proportion of diabetic female was equal to male in less than 20 years age group. In present study proportion of diabetes in female increase in less than 20 years and then decrease was seen in 21-30 years age group followed by again increase in 30-50 years and then decrease was seen above 50 years whereas proportion of diabetes increases in male till the age of 30 years, than decrease was seen till 50 years of age followed by increase above 50 years whereas male preponderance and age-wise increase was seen in other studies.[9-15]

In present study the mean age of female was 50.00±12.69 years and the mean age of male was 52.40±12.64 years whereas the overall mean age of the participants was 54±12 years in a study conducted in Oman.[16]

In present study illiterate were 44.0% and literate were 66.0% whereas study in Oman showed 56% of literate.[16]

In present study majority of study subjects belonged to home maker (38.0%) which was like the study conducted by Gupta et al (48.14%).[17] Majority of the subjects belonged to lower class which was like the study conducted in rural area of Tamil Nadu.[17]

In present study 70.0% of study subjects had physical activity of sedentary type followed by 30.0% of moderate physical activity and none had physical activity of severe type whereas Rao et al study showed 11.1% of the subjects with sedentary lifestyle, while 41.8% were engaged in moderate physical activity.[9]

In present study 80.6% of study subjects had good drug compliance whereas 19.4% had poor drug compliance whereas a Multicentric study conducted in India, revealed 79.4% were compliant with their medication.[18] But other studies revealed poor drug compliance.[19-22]

79.3% of study subjects skipped the drug when it was finished. Only 5.3% of study subjects had supply of drug from hospital fully but rest of them had to buy the drug from the shop. 50.0% had to buy all the antidiabetic drugs from the shop and 44.7% were dependent both on shop and hospital for anti-diabetic drug. 52.0% of study subjects had irregular supply of drug from hospital whereas 48.0% of subjects had regular supply of drugs.

69.3.0% of study subjects were involved in physical activities/exercise whereas 30.7% of them did not had any physical activities/exercise whereas a study conducted in Tamil Nadu 73% of them did mild to moderate physical activity.[17] Another study revealed majority of type 2

diabetics are physically inactive which was different from present findings.[22-24]

Majority of study subjects (52.0%) did physical activity for less than 150 minutes in a week while 48.0% did it for longer duration.

Diabetes was diagnosed in 6.0% of study subjects below 20 years of age. The proportion of diagnosed case of diabetes increased up to 50 years of age and then decreased. The mean age of diagnosis of diabetes was 45.92±13.58 years in study subjects, median age of diagnosis was 47.0±21.0 years and Range was from 14-87.5 years. In Diab-Care Asia, a multi-country study in Asia, the mean age of diagnosis among Indian respondents was 43.6 years.[25]

Majority of study subjects attending the diabetic clinic had 1-5.99 years (67.3%) of duration of diabetes and only 13.3% of subjects had more than 11 years of duration of diabetes. The mean year of duration of diabetes was 5.43 years (1-32.0 years). In present study median year of duration of diabetes was 3.0 (1-32) years whereas a study in Oman showed a median year of duration of diabetes was 7 (4-10) years.[14]

In present study 20.7% of the study subjects were found to be pre-obese-at risk and 18.0% of subjects were obese whereas 28.1% of the individuals are obese when BMI was used in a study done by Rao et al.[9] Another study revealed majority of type 2 diabetics were obese which was different from present findings.[23,24] All of the study subjects were non-vegetarian, but 96.7% of the subjects consumed green leafy vegetables more than 4 days per week. Only 4.7% of the subjects consumed red meat for 2-3 days per week.

Proportion of comorbid conditions present along with diabetes was 54.7% for hypertension, followed by dyslipidemia (7.3%), arthritis (5.3%), cardiac disease (4.7%), thyroid disease (2.7%), cataract (2.7%) and least for stroke (2.0%) in present study. Facility based cross-sectional observational study conducted in Bareilly revealed 55.5% study subjects had hypertension consistent to present study.[15] In the Chennai Urban Population Study, 21.4% of diabetes patients had coronary artery disease which was different and more than that of the present study.[26,27]

In this study proportion of complications of diabetes was mostly due to neuropathy (20.0%), followed by gastropathy (8.0%), nephropathy (5.3%), foot ulcer (4.0%) and least due to retinopathy (2.7%). Study in Johns Hopkins Hospital in Baltimore showed proportion of retinopathy in 25.7% of subjects, nephropathy in 7.1% and peripheral neuropathy in 46.5%.[28] In the Chennai Urban Population Study, 21.4% of diabetes patients had coronary artery disease, while 6.3% had peripheral vascular disease.[26,27] The percentages of patients having diabetic retinopathy, microalbuminuria and peripheral

neuropathy in the Chennai urban rural epidemiological study were 17.6, 26.9% and 26.1% respectively.[29-31]

Diabetic complication was found to be more in female in this study but not significant. Caste, educational status, occupation, socioeconomic status, BMI, nature of physical activity, drug compliance, current addiction, duration of diabetes, comorbidity showed non-significant association with the diabetes complication, but statistically significant association found between distance of hospital from home and diabetes complication.

CONCLUSION

Antidiabetic drug were not regularly available in hospital so all most all had to purchase drug from the shop when not available at hospital. Almost half of them purchase all the antidiabetic drugs from the shop regularly. Majority had good antidiabetic drug compliance even though they had to buy the drug from the shops, but they skipped the drug when it was finished. As the distance of hospital from home is more, diabetes complication is also more in them.

Limitations

In this study sample size was less because all diabetic patients attending the hospital were not getting treatment from the diabetic clinic, only patient with uncontrolled diabetes were treated and those who had controlled blood sugar and conditions related to diabetes for 3-6 month of follow up were sent back to medicine department for further treatment.

Recommendations

Diabetes complication was found when distance of hospital from home was more due to irregular visit to hospital by diabetic patients, so regular and frequent visit to frequent visit to diabetic clinic as per doctor advice. Regular and constant supply of all anti-diabetic drug from hospital. Laboratory facilities along with other investigation facilities for diagnosing the diabetic complication should be available and attached to diabetic clinic either free or minimal cost.

ACKNOWLEDGEMENTS

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