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Epidemiology

Identifying Patterns of Lifestyle Behaviors among People with Type 2 Diabetes in a Tertiary Care Hospital of Delhi: An Observational Study

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Abstract **Original Research Article**

Background: Knowing the lifestyle behaviour and sociodemographic patterns and their association with duration of diabetes is important not only to understand the underlying etiologies and pathogenetic mechanisms but also successful treatment strategies to manage diabetes in India. ***Objective:*** To identify patterns of lifestyle behaviors among people with Type 2 Diabetes with respect to their duration of diabetes. ***Material and methods:*** This descriptive and cross sectional study systematic random sampling technique was used to select the sample of type 2 diabetic patients. Scheduled interview of 412 type 2 diabetic patient was conducted at outpatient department of a tertiary care hospital in New Delhi. ***Results:*** The lifestyle behaviour of patients shows that among 78 percent smoker duration of diabetes between 2 to 10 years, among 80 percent patient having alcohol drinking behaviour duration of diabetes between 2 to 10 years, among 70 percent patient having walking behaviour duration of diabetes between 2 to 10 years and around 53 percent patient having depression and anxiety behaviour (when they think about living with diabetes) duration of diabetes more than 5 years. ***Conclusions:*** In conclusion, the study results show that duration of diabetes is associated with sociodemographic characteristics and lifestyle behaviour of patients. Selected lifestyle behaviour like alcohol consumption behaviour, diet type (vegetarian or nonvegeterian), moderate intensity activity behaviour (like walking) and depression and anxiety behaviour (when they think about living with diabetes) shows statistically significant association with duration of Type 2 diabetes mellitus.

Keywords: Lifestyle behaviour, Type 2 Diabetes Mellitus, Sociodemographic Characteristics.

INTRODUCTION

Diabetes mellitus (DM) has been one of the leading chronic diseases worldwide over the past decades (WHO). The burden of diabetes has steadily increased over the past quarter century in India and across the globe, with India contributing a major part of the global burden. Among the factors contributing to the increasing incidence of Diabetes mellitus include sedentary lifestyle, obesity and population ageing. Diabetes mellitus complications increase morbidity and mortality and consequently decrease the health-related quality of life. Hence, the complications not only affect physical and mental functioning and patient's well-being, this also increases the overall healthcare costs of each country. At present, India is experiencing rapid socioeconomic growth that is paralleled by a massive increase in diabetes prevalence. The number of people with diabetes in India increased from 26.0 million in 1990 to 65.0 million in 2016 [1]. The prevalence of diabetes in adults aged 20 years or older in India increased from 5.5% (4.9–6.1) in 1990 to 7.7% (6.9–8.4) in 2016 [1]. Rapid economic growth is linked to epidemiological transitions associated with increased life expectancy, lifestyle changes, affluence associated with dietary excess, reduced physical activity and unplanned urbanization [2], resulting in higher prevalence of diabetes among Indian population [3]. The components of lifestyle behaviour relevant to health include physical activities, diet pattern, sleeping pattern, smoking behaviour, drinking behaviour and psychosocial characteristics. Lifestyle management is a fundamental aspect of diabetes care and includes diabetes self-management education and support (DSMES), medical nutrition therapy (MNT), physical activity, smoking cessation counseling and psychosocial care [4]. Recent evidence supports that all individuals, including those with diabetes should be encouraged to reduce the amount of time spent being sedentary (e.g., working at a computer, watching TV) by breaking up

bouts of sedentary activity (30 min) by briefly standing, walking, or performing other light physical activities [5, 6]. Avoiding extended sedentary periods may help prevent type 2 diabetes for those at risk and may also aid in glycemic control for those with diabetes. Eating Patterns, macronutrient distribution and meal planning are important components of lifestyle behaviour. Emphasis should be on healthy eating patterns containing nutrient-dense foods, such as vegetables, fruits, legumes, low-fat dairy, lean meats, nuts, seeds and whole grains, as well as on achieving the desired energy deficit [7]. Smokers with diabetes (and people with diabetes exposed to secondhand smoke) have a heightened risk of cardiovascular disease (CVD), premature death and microvascular complications. Smoking may have a role in the development of type 2 diabetes [8]. Diabetes and alcohol consumption are two of the most dangerous public health problems our country faces. The prevalence of alcohol consumption in India is around 21% among men and 2% among women [9]. Alcohol influences glucose metabolism in several ways in diabetic patients as well as in non-diabetic patients. Taken with food alcohol is the preferred fuel and causes higher blood glucose levels leading to insulin response. Diabetes is typically a progressive chronic disease, and chronic illness is often emotionally stressful, leading to both physical and psychological fatigue. Patients with chronic illness realize that they should adhere to strict lifestyle modifications and fear the development of complications following the diabetes diagnosis. There are several stress factors in a diabetic patient's daily life that can eventually lead to burnout symptoms which might influence the clinical outcome or self-care lifestyle behaviors of patients with type 2 diabetes, and the severity of these symptoms may depend on the duration of diabetes. Complex environmental, social, behavioural and emotional factors, known as psychosocial factors, influence living with diabetes and achieving satisfactory medical outcomes and psychological well-being. Thus, individuals with diabetes and their families are challenged with complex, multifaceted issues when integrating diabetes care into daily life. Many non-communicable chronic diseases, including type 2 diabetes are highly prevalent and largely preventable. The prevention and management of type 2 diabetes in India requires a combination of lifestyle changes and long-term health-care management. Knowing the lifestyle behaviour and sociodemographic patterns of the disease with respect to the disease duration are important not only to understand the underlying etiologies and pathogenetic mechanisms but also to predict future course of epidemic that would help policymakers to design and implement successful treatment strategies to manage diabetes in India. In this study, attempt has been made to identify patterns of lifestyle behaviors among people with Type 2 Diabetes with respect to their duration of diabetes.

MATERIAL AND METHODS

The study is descriptive and cross sectional in nature which aimed to identify patterns of lifestyle behaviors among people with Type 2 Diabetes with respect to their duration of diabetes. Systematic random sampling technique was used to select the sample of type 2 diabetic patients. The sample for the present study was selected taking into consideration the inclusion Criteria which are patients with confirmed type 2 diabetes mellitus and aged 18 years or older, patients attending outpatient department of a tertiary care hospital in New Delhi and who give consent to be a part of the study and exclusion criteria included those patients who are seriously ill or have been advised admission in the hospital.

The study variables include dependent variable which is diabetes and independent variables which are sociodemographic characteristics such as gender, age, marital status, religion, educational status, occupation, average monthly family income, family size and lifestyle behaviour which includes physical activities, diet pattern, smoking behaviour, drinking behaviour and psychosocial characteristics of the patients with type 2 diabetes.

For collection of data a self-developed semi structured questionnaire was prepared based on WHO STEPS Instrument for NCD Risk Factors (Core and Expanded Version 1.4). Scheduled interview of 412 type 2 diabetic patient was conducted between 24th September 2018 to 31st December 2018 at outpatient department of a tertiary care hospital in New Delhi. All data collected from filled up questionnaire were entered into Microsoft Excel 2007 worksheet in the form of a master chart. These data were classified and analyzed using Statistical Package for the Social Sciences (SPSS version 20) as per the aims and objectives of the study. The data on sample characteristics were described in the form of tables. Inferential statistics such as Chi-square test was used to find out the association of sociodemographic characteristics with gender, lifestyle behaviour with gender and lifestyle behaviour with sociodemographic characteristics of type 2 diabetes mellitus patients.

RESULTS

The sociodemographic characteristics of the study population showed out of 412 diabetic patients, 52.7 percent were males while 47.3 percent were females, maximum 35.7 percent were of 41-50 age groups, mostly 95 percent were married and 90 percent were Hindus. About 16 percent of the study subjects were illiterate and 45.1 percent were educated only up to high school level (Figure No. 1), about 38.3 percent of the subjects were unemployed and majorities of them 31.3 percent were women engaged as housewives (Figure No. 2), 74.8 percent diabetic patients had average monthly family income fall below Rs. 20,000.

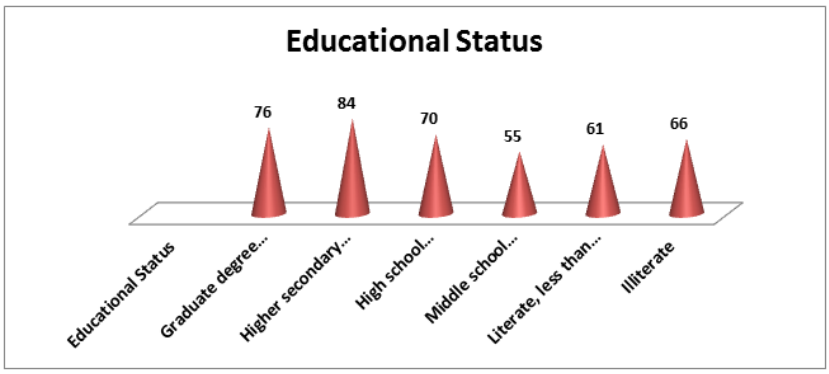

Fig-1

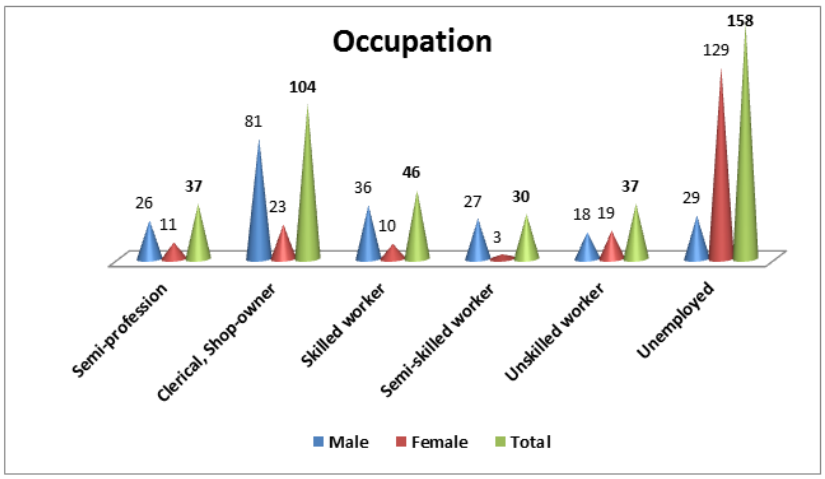

Fig-2

The lifestyle behaviour showed out of 412 diabetic patients 35.4 percent were smoker, 28.8 percent had drinking behaviour, 32.7 percent were vegetarian, 51.9 percent had regular walking behaviour and 58.7 percent feel depression or anxiety when they think about diabetes (Figure No. 3).

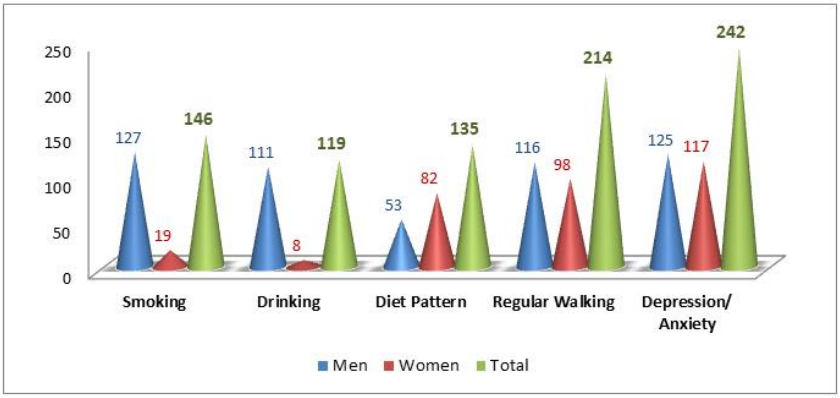

Fig-3

The diabetes duration wise distribution of sample of patients shows that out of 412 patients, 40.3 percent have diabetes duration for 2 to 5 years, 31.6 percent have diabetes duration for 6 to 10 years, 15.3 percent have diabetes duration for 0 to 1 year, while only 12.9 percent have diabetes duration for more than 10 years. The average diabetes duration of the study participants is 06 years.

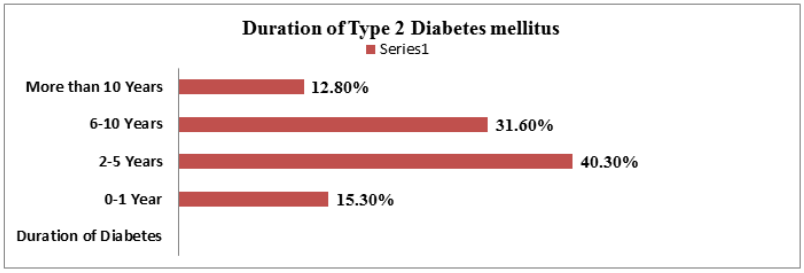

Fig-04

The relationship of selected lifestyle behaviour with duration of Type 2 diabetes mellitus shows there exist statistically significant association of duration of diabetes with alcohol consumption behaviour, diet type (vegetarian or nonvegeterian), moderate intensity activity behaviour (like walking) and depression and anxiety behaviour (when they think about living with diabetes).(Table 01)

Table-01: (Relationship of Lifestyle behaviour with duration of Type 2 diabetes)

Duration of Diabetes	Currently smoke		Consumed alcohol within the past 12 months		Diet type		Moderate intensity activities		Irritated or depressed		
	Yes	No	Yes	No	Veg.	Non-veg.	Yes	No	Yes	No	Can't say
0-1 Years	19	44	18	45	20	43	28	35	26	26	11
2-5 Years	67	99	59	107	39	127	99	67	88	60	18
6-10 Years	48	82	37	93	49	81	52	78	98	18	14
>10 Years	13	40	5	48	27	26	35	18	30	12	11
P Value	0.146		**0.004***		**0.001***		**0.001***		**<0.001***		

* p value ≤ 0.05 significant

DISCUSSION

Diabetes mellitus is a major public health problem worldwide. Its prevalence is on the rise in many parts of the developing countries including India. Individuals with Type 2 diabetes mellitus are considered as high priority as they are potential candidates for rapid evaluation to prevent and halt the progression of the complications. The age wise prevalence of diabetes among the patients is found to be 18.6 percent for 18-40 years, 35.7 percent for 41-50 years, 26.2 percent for 51-60 years and 19.4 percent for more than 60 years (Figure no. 02), which is similar to the findings of Anjana *et al*. Koria *et al.* [10] in their study also found majority of diabetic population (53.64%) was between 45-60 years but there was fall in the number of diabetic patients after 60 years of age. This may be due to elderly people are less mobile and less reporting themselves at hospitals for diabetes diagnosis and management. The educational status wise distribution of diabetic patients shows that that 16 percent of the study subjects were illiterate and 45.1 percent were educated only up to high school level which is similar to the findings by Rubin *et al*. [11] who observed that education appears to have a major effect on diabetes prognosis. Whether this was related to greater understanding of the illness and therefore greater commitment to self-care and therefore better access to medical care, or both, was difficult to say. The occupation wise distribution of sample of patients shows that about 38.3 percent of the subjects are unemployed and majorities of them 31.3 percent are women engaged as housewives. The above finding is in consistent with the study of Koria *et al*. [10] who reported that among the diabetic population, housewives had more prevalence of diabetes (37.37 percent) as compared to others. The probable reason for this is that housewives do not do any other physical activity apart from their household chores and are not involved in any other day-to-day physical activity. However, Rao *et al*. [12] found that people engaged in service jobs were associated with a high risk for diabetes. In the present study it is found that only 9 percent of diabetic patients have semiprofessional and professional occupation which is in consistent with the result of Arora *et al*. [13] and Patil and Gothankar [14], where they found a significant association between the occupation and risk status of diabetes. This suggests that diabetes is no longer a disease of the affluent, or a "rich man's disease". It is becoming a problem even among the middle-income and poorer sections of the society. This may be due to changes in the lifestyle and standard of living of people from urban slum areas, as a result of urbanization. However, Mohan et al. [15] found a significant association between diabetes and higher socioeconomic class as well. Household income is an indicator of the material conditions of one's environment. In the present study it is found that 74.8 percent diabetic patients whose average monthly family income fall below Rs. 20,000 which is in consistent with the finding by Rayappa *et al*. [16] and Williams *et al*. [17] who showed higher prevalence of diabetes among lower family income group. In addition, Kinge

and Supe [18] in their study also found higher prevalence of diabetes among lower family income class. The present study findings show that 58.5 percent smokers have duration of diabetes which is less than 5 years which is in consistent with the study done by Wang *et al*. [19], who reported that 41 percent smokers have duration of diabetes which is less than 5 years. Keeping in view the habit of alcohol consumption of the diabetic patients it is observed that 64.7 percent patients who consume alcohol have duration of diabetes for less than 5 years whereas only 4.2 percent have their diabetes duration for more than 10 years. It is also seen that 80.7 percent patients who consume alcohol comes in the group having moderate duration of diabetes (2 to 10 years). The findings of the current study is in consistent with study of Wang *et al*. [19], who found that 41 percent patients who consume alcohol have duration of diabetes less than 5 years whereas 27 percent have their diabetes duration of more than 10 years. The present study findings show that among vegetarian patients 36.3 percent have disease duration of 6 to 10 years. Among non- vegetarian patients 45.8 percent have disease duration of 2 to 5 years (Table no. 01). From the above findings it is seen that the diabetic patients who are non-vegetarians, among them the disease duration for 2 to 5 years is more in number while few patients have their disease duration for more than 10 years. Among the diabetic patients who are vegetarians many of them have disease duration which is for 6 to 10 years while few patients have their disease duration which is less than 1 year. The above finding match with the study of Wang *et al*. [19], who in their result found that 15 percent diabetic patients having low vegetable diet have less than 5 years of diabetes whereas 55 percent having low vegetable diet have more than 10 years of diabetes. The present study finding shows that recently diagnosed (less than 1 year) and longer duration (more than 10 years) diabetic patients have low (29.5 percent) moderate intensity work behaviour (like walk) whereas moderate intensity work behaviour (like walk) is high (70.6 percent) in diabetic patients having moderate duration (2 to 10 years) of diabetes. The study finding is in consistent with finding of Wang *et al*. [19] who found in their study that sedentary behaviour is high in recently diagnosed (less than 1 year) and longer duration (more than 10 years) diabetic patients. The present study findings also show that depression and anxiety among diabetic patients having duration of diabetes for more than 5 years is 53 percent whereas in less than 5-year diabetes duration it is 47 percent. This is in consistent with the study of Bahety *et al*. [20], who reported that depression was significantly more (2.66 times) in type 2 diabetic patients having disease duration for more than 5 years as compared to disease duration for less than 5 years. The study result is also in consistent with the study of Rajput *et al*. [21] and Joseph *et al*. [22] who found association of duration of diabetes with depression.

CONCLUSIONS

Findings of the study show that duration of diabetes are associated with sociodemographic characteristics and lifestyle behaviour of patients. Selected lifestyle behaviour like alcohol consumption behaviour, diet type (vegetarian or nonvegeterian), moderate intensity activity behaviour (like walking) and depression and anxiety behaviour (when they think about living with diabetes) shows statistically significant association with duration of Type 2 diabetes mellitus. Shifting the lifestyle behaviour in the population could have an important impact on the duration of diabetes and, as a consequence, complications of diabetes. More action is needed for improved diabetes self-management among those living with the disease with lower socioeconomic status, and those patients who continue to drink, smoke, lesser walking behaviour and more feeling of depression or anxiety when think about diabetes. Provision of information and advice for lifestyle behavior at the primary care level, and targeted to these higher risk groups, may be an effective health promotion strategy. Hence, after reviewing literature, it can be said that in future, more variable specific research is required, especially focusing on factors affecting lifestyle behaviour which further affects physical or mental health of the individual. Thus, it would be appropriate to suggest that prevention of diabetes is need of an hour, and this objective can be achieved by empowering patients, health professionals, and family members regarding importance of good and healthy life.

Ethics approval and consent to participate

Written informed consent was obtained from all the study participants and ethical approval was granted by the National Institute of Health and Family Welfare, New Delhi.

Competing interests

None of the authors of this paper have financial or non-financial competing interests with regards to the content of this paper.

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Authors' contributions

Dr. Prakash Ranjan contributed to the study concept, study design, conduct of the study, collection and interpretation of the data, statistical analysis and preparation of the manuscript. Prof. Jayanta K. Das and Prof. Mihir Kumar Mallick contributed to the study concept and overall conduct of the study.

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