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Assessment of prevalence of diabetic complications in a tertiary care hospital

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Abstract
Diabetes is a group of disorders characterized by high glucose levels that cause unique eye, kidney, and nerve complications and an increased risk for cardiovascular disease. These factors contribute to an increased risk of illness and death which places a significant burden on health care system. A prospective observational study was carried out for a period of three years with the aim to determine prevalence of diabetic complications. A total of 400 patients were enrolled in the study with the inclusion criteria of patients with past history of diabetes as well as newly diagnosed cases. The study showed that diabetes is more prevalent in females than males and also found a higher prevalence of the disease among elderly patients. The study revealed the presence of more macrovascular complications like hypertension, IHD, dyslipidaemia and stroke. Adequate metabolic control may help to reduce the risks of complications over the long term. This also improves the quality of life with diabetes and reduces the burden on health care systems.

Keywords: diabetes, complications, prospective, prevalence

Introduction
Diabetes is a chronic disease that leads to high morbidity and mortality resulting from the complications that develop during its clinical course [1]. Diabetes and its complications have significant social and economic impact on individuals, families, health systems and countries [2]. The Prevalence of diabetes is increasing worldwide, probably due to a longer life expectancy of the general population, a sedentary lifestyle and obesity [3]. Diabetes is characterised by high glucose levels that cause unique eye, kidney and nerve complications and an increased risk for cardiovascular disease [4]. Effective management of diabetes requires sustained glycaemic control over many years to lower the risk of macro and micro vascular complications in people with diabetes. The UK prospective diabetes study (UKPDS) found that every 1% reduction in glycated haemoglobin (HbA_{1C}) was associated with 37% decrease in micro vascular disease [5]. These complications substantially increase not only the economic burden for health care systems, but also diminished quality of life [6]. Therefore, this study aims to determine the prevalence of diabetic complications at tertiary care centre.

Materials and Methods
A convenience sample of In-patients admitted at Basaveshwara medical college hospital were participated in this study. The 3 years prospective observational study was carried out from January 2015 to December 2017. This study was designed for evaluation of the Prospective Patients data for prevalence of diabetic complications and its associated socio-demographic characteristics of study subjects in In-Patients admitted at study site [2]. All the necessary and relevant information were collected from Case records. The study was approved by Institutional human research ethics committee of SJM college of Pharmacy.

Statistics
Data obtained from this study were grouped and analysed by tables using Statistical Package for social sciences (SPSS) version 19.0. Categorical data was presented as frequency and percentage distribution.

Inclusion Criteria
- Patients of either sex who was admitted to general medicine and Paediatric wards for the treatment of Diabetes were included in the study
- With at least one Anti-diabetic drug
- Admitted with co-morbidities
- Willing to give informed consent

Exclusion Criteria
- Gestational Diabetes
- Malignancy with Diabetes
- Psychiatric illness with Diabetes

Sources of data
- Patient's Case records during Hospital stay
- Medication Charts and Lab reports

Results
A total of 400 patients with diabetes mellitus were enrolled in the study, out of which 192 were males and 208 were females. Among the study population, the greatest number of patients was in the age group of > 60 years. The association of educational status of patients with the occurrence of diabetes was found more in illiterate subjects as compared to Primary and above graduation. It was found that housewives are prone for the development of diabetes as our study comprises more female patients. The duration of diagnosis of the diabetes was found more to be less than 5 years in study participants with

313 subjects having inadequate physical activity, which can be an important factor associated with the development of diabetic complications. The base line characteristics of enrolled patients are presented in Table No 1.

In the study population 249 subjects found with the presence of diabetic complications, with more macrovascular complications which include hypertension, ischemic heart disease (IHD), dyslipidaemia and stroke. This can be attributed to factors like advancing age, illiteracy, physical inactivity and unemployed because of more female patients. The micro vascular complications and foot ulcer (Combination of micro and macro) found to be less in the study subjects. The findings are depicted in Table No.2.

Discussion

The current study was designed to assess and screen the patients with the diabetes mellitus in order to begin efforts adequately to mitigate the burden of diabetic complications. Good glycaemic control improves microvascular complications and appropriate control of hypertension and dyslipidaemia are extremely important in macrovascular prevention of the disease [7]. A total of 400 patients were enrolled in the study with the inclusion criteria of patients with past history of diabetes as well as newly diagnosed cases. The study showed that diabetes is more prevalent in females than males. The study also found a higher prevalence of the disease among elderly patients, the results are similar to the study conducted by Kinra S *et al*, [8]. The study revealed the presence of more macrovascular complications like hypertension, IHD, dyslipidaemia and stroke. This clearly shows the impact of diabetes related complications on cost of the therapeutic approach [9]. There is, therefore, a need to initiate and implement effective and evidence based intervention strategies for the prevention and early detection of diabetes, as well as for the appropriate management of diabetes and its complications [2]. The factors associated with diabetic complications include advancing age, illiteracy, physical inactivity and unemployment. Diabetes Mellitus is a disease associated with reduced quality of life due to associated chronic complications that develop throughout the natural development of the disease. Adequate metabolic control may help to reduce the risks of complications over the long term. This study provides relevant epidemiologic information about the diabetes related complications.

Table 1: Baseline characteristics of study population

Sl. No	Category	Number of Patients (n=400)	Percentage (%)
1	Gender		
	Male	192	48 %
	Female	208	52 %
Age groups (Years)			
2	< 20	0 5	1.25%
	21-30	11	2.75%
	31-40	41	10.25%
	41-50	82	20.50%
	51-60	107	26.75%
	> 60	154	38.50%
Education			
3	Illiterate	199	49.75%
	education	150	37.50%
	Graduate and above	51	12.75%
Occupation			
4	Business	34	8.50%
	House wife	196	49.00%
	Professional	36	9.00%
	Farmers	73	18.25%
	Workers	61	15.25%
Duration of diagnosis of Diabetes mellitus (Years)			
5	0-4	186	46.50%
	5-9	84	21.00%
	10-14	60	15.00%
	> 15	70	17.50%
Physical activity			
6	Adequate	87	21.75%
	Inadequate	313	78.25%

Table 2: Distribution of presence and types of Diabetic complications

Sl. No	Category	Frequency	Percentage (%)
1	Presence of complications(n=400)		
	Present	249	62.25%
	Absent	151	37.75%
2	Type of complications (n=249)		
	Microvascular	19	7.63%
	▪ Retinopathy (12) ▪ Nephropathy (07)		
	Macrovascular		
	▪ Hypertension (135) ▪ IHD (34) ▪ Dyslipidaemia (29) ▪ Stroke (10)	208	83.53%
	Foot ulcer	22	8.83%

Conclusion

In conclusion it is evident from our study that there is an emerging trend in the development of chronic diabetic complications. There is a need for its approach and improve in clinical care of patients to ensure optimal glycaemic control. Furthermore, there is a need to educate patients regarding self-care. This will reduce the frequency of complications. This also improves the quality of life with diabetes and reduces the burden on health care systems.

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