



# The Frequency of Diabetes Related Complications in Patients with Type 2 Diabetes a Case Study of Tertiary Care Hospital

**Nadeem Baloch<sup>1\*</sup>, Ali Gul<sup>2</sup>, Waseem Sarwar Bhatti<sup>3</sup>, Inayatullah Magsi<sup>2</sup>,  
Yaser M Alahmadi<sup>4</sup> and Abdulaziz Jafar Almusalam<sup>5</sup>**

<sup>1</sup>Institute of Pharmacy, Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan.

<sup>2</sup>Shaheed Mohtarma Benazir Bhutto Medical University, Larkana, Pakistan.

<sup>3</sup>Pir Abdul Qadir Shah Jeelani Institute of Medical Science, Pakistan.

<sup>4</sup>Clinical and Hospital Pharmacy Department, College of Pharmacy, Taibah University, Al-Madinah Amunawarah, Saudi Arabia.

<sup>5</sup>Pharmacy Department, King Fahad Hospital, Al-Madinah Amunawarah, Saudi Arabia.

## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## **ABSTRACT**

**Introduction:** The peoples suffering from diabetes are at greater risk for leading to diabetes related complication due to improper glycemic control resulting in micro or macrovascular complication.

**Methods:** A descriptive survey based study was conducted. A total of 400 patients were interviewed by purposive sampling with their written information using series of questions with the help of a structured questionnaire. All the data was evaluated and results were given on percentage basis through SPSS20.00.

Inclusion criteria were all diabetic patients having age between 30 years to 80 years.

Exclusion criteria were diabetic patient with chronic kidney disease, chronic liver disease, alcohol misuse, pregnancy, lactating mother.

**Results:** 306 (76%) patients were visit the hospital with some diabetic associated complications. 74 (24%) from diabetic nephropathy, 76 (26%) with diabetic retinopathy and 153(50%) with diabetic neuropathy.

**Conclusion:** Diabetic Associated Complications were more in patients who were taking oral hypoglycemic agents as compare to insulin.

*Keywords: Diabetes; retinopathy; neuropathy; nephropathy.*

## 1. INTRODUCTION

Diabetes as a main cause of mortality and morbidity in Asia. The patients with diabetic related complication will be markedly raised with 330 million people will have a diabetes by 2025 as predicated [1].

In Pakistan about 52 lacs people were suffering from diabetes and by 2030 more than 13 million people will be suffering from diabetes as per prediction of a report of Asian diabetes association [2].

In Pakistan it has been reported that 33% of diabetic patients were suffering from retinopathy and 40% from nerve problem complications. [3,4]. With proper glycemic control by self-blood glucose monitoring the risk of diabetic associated complication will be decreased [3,5,6]. In sub Saharan Afarican countries about 90% of diabetic cases are undiagnosed [7]. The patients who were not diagnosed properly with diabetes already have one of the diabetic related micro or macro-vascular complication [8,9].

The peoples suffering from diabetes are at greater risk for leading to diabetes related complication due to improper glycemic control resulting in micro or macrovascular complication.

The main reason behind the cause of death and responsible for increased expenditure is the cardiovascular complication in patient suffering from diabetes. [10,11,12]. It has been reported that the risk of myocardial Infarction (MI) in Diabetic patient is same as that of a patient who is non diabetic with previous MI history [13]. The tachycardia is most common in non-glycemic control as compare to good glycemic control in type 1 diabetic population [10]. Cerebrovascular disease is also the considered as a major risk factor in diabetic population [14]. The stroke and death has been reported due to type 2 diabetes [15]. It has been reported that proper type 1 diabetic monitoring leads to 42% of reduction of

cardiac related complication and 57% reduction in stroke [16].

The kidney related complication are due to improper glycemic control and hypertension. The proper glycemic control and proper monitoring of blood pressure can decreases the prevalence of kidney related problems. The occurrence of nephropathy is most common in a person suffering from diabetes as compare to those who are non-diabetic. 7% of totally undiagnosed type 2 diabetic peoples are reported to have a microalbuminuria already [17]. The occurrence of microalbuminuria was 12 % in type 1 diabetic population. [17, 18].

Hyperglycemia is the one of the major factor for blocking and damaging the vessels responsible for blood supply to retina. It has been studied that the retinopathy developed a 7 year early in patients who is not diagnosed with diabetes type 2 [19].

Subsequently the elimination of additional bases of the symptoms of the nerve dysfunction in patients suffering from diabetes is considered as diabetic neuropathy. It has been observed that the amputation ratio is 27 times more in diabetic population compare to non-diabetic.

Diabetes also responsible for gingivitis (inflammation of the gum) due to improper glycemic control.40% of the patients with diabetes has sleep apnoea showing the relationship between diabetes and sleep apnoea [20].

## 2. METHODOLOGY

The data was gathered with the help of well-developed questionnaire based on related important parameters. The study design was descriptive survey based and the outcomes was quantified in modest frequency tables on %age basis. The outcomes were assembled in different graphs indicating each constraint individually.

**2.1 Sample Size**

402 patients was evaluated using the designed questionnaire.

**2.2 Sample**

The purposive method for sampling was used for the enrolment of the samples at tertiary care hospital of larkana out-patient department.

**2.3 Collection of Data**

A well designed questionnaire consisting of a study related matters like the patient demographic data, pregnancy and lactation information, alcohol, diabetes history along with any comorbidity, medical record and diabetic complication.

**2.3.1 Inclusion criteria**

Diabetic patients having age between 30-80 years are included.

**2.3.2 Exclusion criteria**

Diabetic patients with any already kidney related problem, pregnant and lactating mothers, predetermined liver disease and alcohol misuse were excluded.

**2.4 Data Analysis**

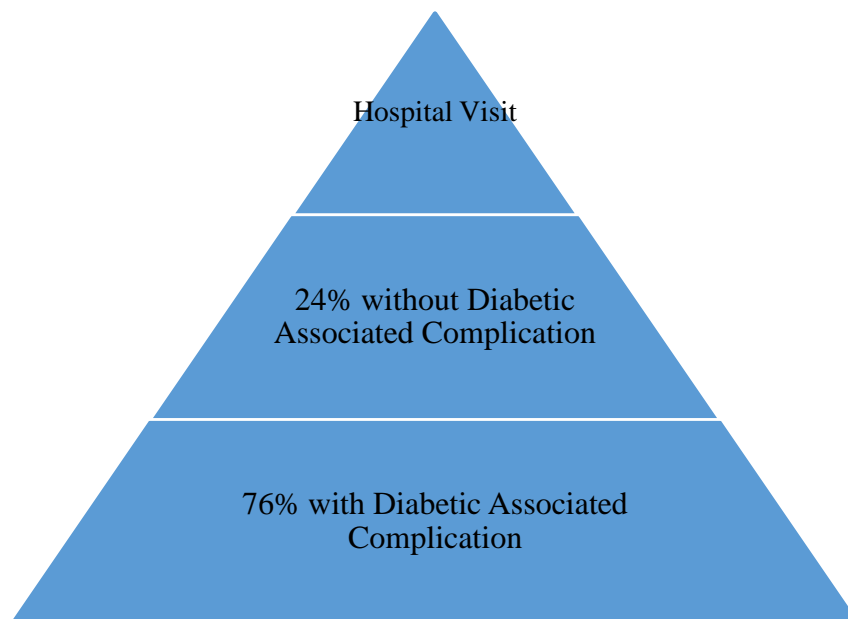
The Gathered data were assessed by Spss.20.00 and outcomes were arranged on frequency basis.

**3. RESULTS**

402 individual suffering from Diabetes was evaluated at tertiary care outpatient department with the help of well-designed questionnaire. From those 53% and 47% were male and female respectively. From 402 diabetic patients 306 (76%) of the people have Diabetic Associated Complication while 96 (24%) of the patients did not have any Diabetic Associated Complication.

**Table 1. Purpose of Hospital Visit**

Hospital Visit	No: of Patients	Percentage
With Diabetic Associated Complication	306	76%
Without Diabetic Associated Complication	96	24%
Total	402	100%



**Fig. 1. Purpose of hospital visit**

**Table 2. Type of Anti-Diabetic Medication Taken by Patients Suffering from Diabetic Associated Complication**

		Drugs * Diabetic Associated Complication Cross tabulation				Total
		Diabetic Associated Complication				
		Diabetic Neuropathy	Diabetic Retinopathy	Diabetic Nephropathy	None	
<b>Drugs Insulin</b>	Count	14	0	0	94	108
	% within Drugs	13.0%	0.0%	0.0%	87.0%	100.0%
	% within Diabetic Associated Complication	9.2%	0.0%	0.0%	100.0%	27.0%
	% of Total	3.5%	0.0%	0.0%	23.5%	27.0%
	<b>Oral Hypoglycemic Agent</b>	Count	139	79	74	0
	% within Drugs	47.6%	27.1%	25.3%	0.0%	100.0%
	% within Diabetic Associated Complication	90.8%	100.0%	100.0%	0.0%	73.0%
	% of Total	34.8%	19.8%	18.5%	0.0%	73.0%
<b>Total</b>	Count	153	79	74	94	400
	% within Drugs	38.2%	19.8%	18.5%	23.5%	100.0%
	% within Diabetic Associated Complication	100.0%	100.0%	100.0%	100.0%	100.0%
	% of Total	38.2%	19.8%	18.5%	23.5%	100.0%

**Table 3. Type of Diabetic Associated Complication**

Diabetic Associated Complication	No: of Patients	Percentage
Diabetic Retinopathy	79	26%
Diabetic Nephropathy	74	24%
Diabetic Neuropathy	153	50%
Total	306	100%

It was observed that 14 diabetic patients were taking insulin and remaining 292 diabetic patients were maintained on oral hypoglycemic control out of total 306 patients who visited with some diabetic related complication.

### 3.1 Diabetic Associated Complication

The patients who were visit the hospital with diabetic related complication, 26% diagnosed with diabetic retinopathy, 24% diagnosed with nephropathy and remaining 50% were identified with diabetic neuropathy

### 4. DISCUSSION

47% female and 53% were male from the total number of the patients that are 402 interviewed with the help of well-designed questionnaire at tertiary care larkana out-patient department where as in [21] to 52.2% and 47.8% were male and female respectively.

Out of 306 diabetic peoples who reported with diabetic related complication, 36 peoples were taking insulin, 86 diabetic peoples were taking sulphonylureas, 24 diabetic individual were

taking biguanides, 124 diabetes persons were taking other combination of oral hypoglycemic drugs.

In the proposed study 306 patients out of 402 diabetic patients visit the tertiary care hospital out-patient department with diabetic related complication, 26% diagnosed with diabetic retinopathy, 24% diagnosed with nephropathy and remaining 50% were identified with diabetic neuropathy as compare to (Hillary A.) [22] in which 47.9% of patients with diabetes were diagnosed with retinopathy, 50% of peoples with diabetes visited due to nerve disorder and 6.7% of the individual with diabetes visited with nephropathy.

## 5. CONCLUSION

It was concluded that the patients who visited the hospital with diabetic related complication were more on oral hypoglycemic agent as compare to those who were taking the insulin. The number of diabetic individuals complaining about nerve disorder are more as related to retinopathy and nephropathy respectively. It was observed that there is a resilient requirement of awareness and educational seminars about the diabetes and its related complications and ensure the proper education for proper follow up.

## CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

The study was approved from ethical review committee of faculty of Pharmacy, University of Sindh, Jamshoro.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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