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Prevalence of chronic complications type 2 diabetes mellitus in patents from Hyderabad and Jamshoro

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Abstract
This study is first time reported from reported areas and for this research data was collected from indoor patients of all medical units of LUMHS Hospitals of Jamshoro and Hyderabad from 1st January to 30th June 2017. The subjects were interviewed through questionnaire and diagnose through Biochemical markers correlating with these complications. Total 140 patients include 60% male mean age 56.36 and Females mean age 56.96 were diagnosed. The results shows many Chronic Complications found in Type 2 Diabetes Mellitus patients which cause highest ratio of morbidity and mortality in reported areas.

Keywords: prevalence, chronic complications, type 2 diabetes mellitus, patents, Hyderabad, Jamshoro

1. Introduction
Diabetes mellitus is one of the commonest diseases among the major causes of premature deaths; each year almost 1million people die because of diabetes, Two thirds of these in developing countries. Diabetes is rapidly growing worldwide. Amongst all the continents, Asia has the fastest growing number of people with diabetes, In India having (33), China (23), Pakistan (9) and Japan (7) million people with diabetes. According to the World Health Organization (WHO) the number of people with diabetes in Asia will almost double in the next 20 years [1, 2]. It is estimated that the worldwide number of adults suffering from any form of diabetes will reach 285 million in 2010 and further increase to 439 million in 2030, most of them T2DM cases [6, 7]. The prevalence of diabetes in Pakistan, according to world Health Organization (WHO) criteria, is 8.6%, 11.1% and 13.9% in the provinces of Baluchistan, NWFP and Sindh respectively [8, 9, 10]. Globally, type 2 diabetes mellitus (T2DM) has become one of the most important chronic public health problems [3, 4]. T2DM is a growing cause of disability and early age death, mainly through cardiovascular disease and other chronic complications [3, 5]. Data from prospective and cross-sectional studies consistently point to the fact that diabetic patients are more likely to develop micro- as well as macro-vascular conditions [11, 13]. Prior to the onset of diabetes, many patients already show metabolic abnormalities, such as dyslipidemia, further contributing to the development of complications [12]. About 50% of the subjects of UKPDS had substantial macro- or micro-vascular abnormalities at the time of T2DM diagnosis [13]. It is well known that chronic complications are the major outcome of T2DM progress, which reduce the quality of life of patients, incur heavy burdens to the health care system, and increase diabetic mortality [14, 15, 16]. After adjusting for age, the death rate of people with T2DM is about twice as high as their non-diabetic peers [17]. About 50-80% of all individuals with diabetes die of cardiovascular disease. Cerebrovascular disease, kidney failure also among the leading causes of death [3, 17]. Permanent disability is a common outcome of diabetes, with late complications of diabetes being major determinants for disability. Diabetic eye disease, particularly retinopathy, has become a major cause of blindness throughout the world [3, 18]. Moreover, clinical epidemiologic studies suggest that foot ulcers precede more than 85% of non-traumatic lower extremity amputations (LEAs) in diabetic individuals [19].

2. Materials and Methods
During the present study data was collected from 140 indoor patients of all medical units of LUMHS Hospitals of Jamshoro and Hyderabad. From the month of 1st January to 30th June 2017. The subjects were interviewed through questionnaire and diagnose through Biochemical markers FBS, RBS, HBA1C, LP (HDL, LDL, TG), Urea, Creatinine, Urine DR, CBC while using following equipments, Microlab 300 Semi-Automated Clinical Chemistry Analylyzer (fig.1), Hitachi Cobass 600 Fully Auto Analyzer (fig. 2), Sysmex Uf-100 Automated Urianalyzer (fig.3), Sysmex Xp-300 Automated Haematology Analyzer (fig.4) simultaneously. For the patients having diabetic eye disease (eye cataract & eye disease) following method was adapted, through the questionnaire and confirmed while using equipments (Keratometer, YAG Laser, Argon Laser (fig.5) (used for diagnosis), Auto ref, Photo Slit Lamp (fig. 6) (used in treatment) and with help of consultant.

Fig 1: Microlab 300 Semi-Automated Clinical Chemistry Analylyzer (used for FBS and RBS)

Fig 2: Showing the Hitachi Cobass 600 Fully Auto Analyzer (Used for LP and HDL, LDL, TG), Urea, Creatinine, HBA1C.

Fig 3: Showing Sysmex Uf-100 Automated Urianalyzer (used for Urine DR)

Fig 4: Showing the Sysmex Xp-300 Automated Haematology Analyzer (Used for CBC)

Fig 5: Showing the Keratometer with patient

Fig 6: Showing the Autoref and Photo Slitlamp used in treatment

Fig 7

3. Results

During the present study data was collected from indoor patient of all medical units of LUMHS Hospitals of Jamshoro and Hyderabad. From the month of 1st January to 30st June 2017. The subjects were interviewed through questionnaire and diagnose through Biochemical markers correlating with these complications. In the present study 140 patient include 60% male mean age 56.36 and 39.2% Females mean age 56.96 Among the 140 patient cardiovascular disease found in 21.1% male mean age 56.11 and 20% Female mean age 53.72, Cerebrovascular disease found in 34.1% male mean age 58.1 and 38.1% Female mean age 61.04 and Nephropathy found in 54.11% male mean age 57.3 and Female 60% mean age 58.42. Other chronic complications such as Peripheral vascular Disease, Diabetic Eye Disease include Retinopathy, Diabetic Foot and Diabetic Neuropathy were observed in this study. It is concluded that chronic vascular complications become high in Diabetic patient and the controlled of diabetic decreased the complications and morbidity and mortality ratio in the diabetic patient. Result of three complications, (Cardiovascular disease. Cerebrovascular disease, Nephropathy) were described in this seminar remaining four chronic vascular complication will be described in final seminar Chronic impediments are the most important upshot of type 2 DM advancement, which can condenses the quality of life of patients, incur heavy burdens to the health care system, and increase diabetic mortality. The aims of this study were to describe the prevalence of chronic complications among urban Chinese type 2 diabetic outpatients; and to analyze the associations between chronic

complications and patients' demographics, diabetic related clinical characteristics. It is concluded that chronic vascular complications become high in Diabetic patient and the controlled of diabetic decreased the complications and morbidity and mortality ratio in the diabetic patient. In the present study 140 patient include 60% male mean age 56.36 and 39.2% Females mean age 56.96 Among the 140 patient cardieovascular disease found in 21.1% male mean age 56.11 and 20% Female mean age 53.72. Cerebrovascular disease found in 34.1% male mean age 58.1 and 38.1% Female mean age 61.04 and Nephropathy found in 54.11% male mean age 57.3 and 60% female mean age 58.42. Results show the frequency of Diabetic Foot complication in 140 Type 2 DM Patients, 28 were male and 13 female and ratio measured 32.9% and 23.6% simultaneously. Results show the frequency of Diabetic_Eye_Disease complication in 140 Type 2 DM Patients, 62 were male and 42 female and ratio measured 72.9% and 76.4% simultaneously. Results show the frequency Retinopathy_Occular_lesion complication in 140 Type 2 DM Patients, 23 were male and 19 female and ratio measured 27.1% and 34.5% simultaneously. Results show the frequency * Neuropathy complication in 140 Type 2 DM Patients, 53 were male and 30 female and ratio measured 62.4% and 54.5% simultaneously. The peripheral vascular disease found mostly in T2DM patients This results showing the area wise frequency of T2DM patients out of 140 patients 60 patients 42.9% were from urban areas while 80 patients 57.1% from Rural areas. The results showing the age wise frequency of T2DM patients out of 140 patients these chomplications start from the age of 30 to age of 80.

Complications found in diabetes mellitus T2 patients

1. Vascular Complications

Prevalence of vascular complication out of 140 type 2 DM patients the ratio of the male T2DM patients were found high then female T2DM patient (Fig 8)

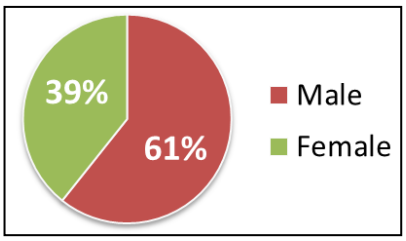

Fig 8: Gender wise frequency of vascular complications T2DM Patients

2. Diabetic Cardiovascular Complications

Results shows that out of 140 indoor patients the cardiovascular complications was found in only eighteen males and eleven females (Table.1) while the ratio measured 62% male and 38% female.

Table 1: Gender wise frequency of Diabetic cardiovascular Patients

		Cerebrovascular_ Disease		Total
		No	Yes	
Gender	Male	67	18	85
	Female	44	11	55
Total		111	29	140

3. Cerebrovascular Complication

Results show the frequency of cerebrovascular complication from collected data of Type 2 DM Patients, 29 were male and 21 female with ratio 58% and 42% simultaneously. (Table.2)

Table 2: Showing gender wise frequency of cerebrovascular complication in Type 2 DM

		Cerebrovascular_ Disease		Total
		No	Yes	
Gender	Male	56	29	85
	Female	34	21	55
Total		90	50	140

4. Diabetic Nephropathy Complication

In out of 140 T2DM patients in 46 males and 33 females found this Diabetic Nephropathy complication with ratios 58% and 42% (Table.3)

Table 3: Showing gender wise frequency of Diabetic Nephropathy complication in Type 2 DM Patients

		Nephropathy_kidney_Falure		
		Yes	No	Total
Gender	Male	46	39	85
	Female	33	21	55
Total		79	61	140

Table 4: This table showing the level of protein in Urine DR in T2DM patients which indicate stage of diabetic nephropathy or kidney problems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Negative	57	40.7	40.7	40.7
	Trace	24	17.1	17.1	57.9
	1+	23	16.4	16.4	74.3
	2+	20	14.3	14.3	88.6
	3+	16	11.4	11.4	100.0
	Total	140	100.0	100.0	

Lab investigation of samples taken from T2dm patients

Table 5: Mean and Standard deviation of Biochemical markers in Type 2 diabetic mellitus patients

	Mean	Range
FBS (60-110) mg/dl	156.54	453-21
RBS (60-160) mg/dl	295.59	600-35
HBA1c (4.8 -5.9)	10.49	16-4.5
Serum Urea (15-50) mg/dl	73.72	343-16
Serum Creatinine (0.50-0.90) mg/dl	1.65	9.5-0.4
Urine D/R (Protien Level) < 1 g/dl	2.38	5-1

Table 6: Mean and Standard deviation of Lipid profile in Type 2 diabetic mellitus patients

Blood Chemistry	Mean	Range
Serum Cholesterol (<=200) mg/dl	145.44	258-65
HDL Cholesterol (>=35) mg/dl	37.06	83-15
LDL Cholesterol (<=130) mg/dl	88.27	160-26

Fig 9: Showing centrifuged blood sample of CVD in T 2 DM patients

1. Most common abnormality is ↓ s HDL and ↑ s Triglyserides
2. A low HDL is the most constant predictor of CV disease in DM
3. Target lipid values: LDL <2.6 mmol/l, HDL >1.15 mmol/l, TG < 2.5 mmol/l

5. Dibiatic Foot

During indoor survey of T2DM patients out of 140 patients only 41 patients have the diabetic foot disorder. As shown in the table.7 as Figure.

Table 7: Gender * Diabetic_Foot_problem Crosstabulation

			Diabetic_Foot_problem		Total
			yes	no	yes
Gender	Male	Count	28	57	85
		% within Gender	32.9%	67.1%	100.0%
	Female	Count	13	42	55
		% within Gender	23.6%	76.4%	100.0%
Total		Count	41	99	140
		% within Gender	29.3%	70.7%	100.0%

Results show the frequency of Diabetic_Foot complication in 140 Type 2 DM Patients, 28 were male and 13 female and ratio measured 32.9% and 23.6% simultaneously.

Table 8: showing Gender wise Diabetic_Eye_Disease Cross tabulation

			Diabetic_Eye_Disease		Total
			yes	no	yes
Gender	Male	Count	62	23	85
		% within Gender	72.9%	27.1%	100.0%
	Female	Count	42	13	55
		% within Gender	76.4%	23.6%	100.0%
Total		Count	104	36	140
		% within Gender	74.3%	25.7%	100.0%

Results show the frequency of Diabetic_Eye_Disease complication in 140 Type 2 DM Patients, 62 were male and 42 female and ratio measured 72.9% and 76.4% simultaneously.

Table 9: Gender * Retinopathy_Occular_lesion Crosstabulation

			Retinopathy_Occular_lesion		Total
			yes	no	yes
Gender	Male	Count	23	62	85
		% within Gender	27.1%	72.9%	100.0%
	Female	Count	19	36	55
		% within Gender	34.5%	65.5%	100.0%
Total		Count	42	98	140
		% within Gender	30.0%	70.0%	100.0%

Results show the frequency Retinopathy_Occular_lesion complication in 140 Type 2 DM Patients, 23 were male and 19 female and ratio measured 27.1% and 34.5% simultaneously.

Table 10: Gender * Peripheral_Vascular_disease Crosstabulation

			Peripheral_Vascular_disease	Total
			yes	yes
Gender	Male	Count	85	85
		% within Gender	100.0%	100.0%
	Female	Count	55	55
		% within Gender	100.0%	100.0%
Total		Count	140	140
		% within Gender	100.0%	100.0%

Table 11: Gender * Neuropathy Crosstabulation

			Neuropathy		Total
			yes	no	yes
Gender	Male	Count	53	32	85
		% within Gender	62.4%	37.6%	100.0%
	Female	Count	30	25	55
		% within Gender	54.5%	45.5%	100.0%
Total		Count	83	57	140
		% within Gender	59.3%	40.7%	100.0%

Results show the frequency * Neuropathy complication in 140 Type 2 DM Patients, 53 were male and 30 female and ratio measured 62.4% and 54.5% simultaneously.

Table 12: This table showing the area wise frequency of T2DM patients out of 140 patients 60 patients 42.9% were from urban areas while 80 patients 57.1% from Rural areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Urban	60	42.9	42.9	42.9
	Rural	80	57.1	57.1	100.0
	Total	140	100.0	100.0	

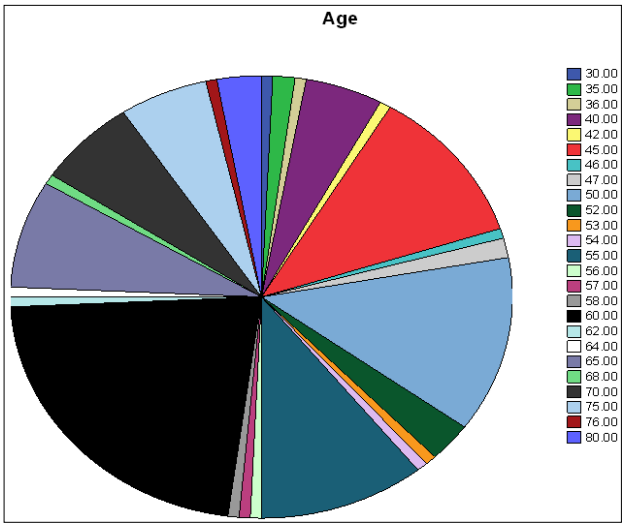

Fig 10: This pie chart showing the age wise frequency of T2DM patients out of 140 patients these chomplications start from the age of 30 to age of 80

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