SindhUniv. Res. Jour. (Sci. Ser.) Vol. 53 (02) 121-126 (2021)

SINDHUNIVERSITYRESEARCHJOURNAL(SCIENCE SERIES)

Frequency of Different Types of Diabetes in Patients Attending Isra University Welfare Hospital Urban Rural Comparrision. Sindh Pakistan

S. Q. SHAH[++], A. R. ABBASI*, A. H. LANJWANI**, B. K. MAHESHWARY, A. BIBI***

National Research Institute of Fertility Care Karachi Ministry of National Health Services Regulations and Coordination,

Received 15th November 2020 and Revised 26th May 2021

Abstract: Diabetes mellitus (DM) is a syndrome due to metabolic disordered and inappropriate hyperglycemia. It is due to total or relative deficiency of the insulin. The diabetes is a major global health problem and leading causes of disability and death in most developed countries. It was a cross sectional study conducted in the month of August 2019.The pre tested questionnaire was filled and the findings were recorded. A total of 166 patients visited the clinic during the period from 1st to 31st of August 2019. Of these 62.65% belonged to urban and 37.35% to rural areas. Among the urban patients 28 % were male and 72% females while the percentage of male and female among rural patients were 35% & 65% respectively. The patients belonged to various age groups with about 46% in age group 50 to 69 years and about 39% in the age group of 30 to 49 years. The most frequent and predominant type of diabetes in both urban and rural patients was type 2 diabetes (95.78%). The incidence of type 1 diabetes was 1.8% and that of gestational diabetes 2.4%. There was no difference in the mean age, mean BMI, Socioeconomics status, family history, level of physical activity, dietary habits and literacy rate among rural and urban population. It is concluded that diabetes type II is the most frequent type of diabetes in both urban areas and rural areas is more common in females of urban area and incidence increases with age. Finally it is concluded that diabetes is more recurrent urban areas as compared to rural areas. The incidence is more in females than in males. Frequency increases with increasing age. The predominant type of diabetes in both rural and urban areas is type II diabetes mellitus.

Keywords: Urban, Rural, BMI, Diabetes Mellitus.

1. INTRODUCTION

Diabetes mellitus (DM) is a syndrome due to metabolic disordered and improper hyperglycemia. It is occurred due to deficiency of insulin (Mashrani 2004). The diabetes is major chronic illness with deep implications for individual health and economic burden of nation. The diabetes is global health problems and one of the leading causes of disabilities and death in the developed countries. The frequency of the diabetes has been rising in the worldwide (Molyneaux and Constaintino 2004). There is crushing evidence of the prevalence of the diabetes has been rapidly increased in the developing countries and newly industrialized countries (Al-Lawati *et al.*, 2002). The occurrence of the type II Diabetes increases with urbanization and modernization (Dong, *et al.*, 2005).The prevalence of IDDM in the developed countries different from the 0.2-20% (Ramaiya *et al.*, 1990). It has been also raised in the worldwide; which has caused growing burden on the health services due to serious nature complications (Thomas *et al.*, 2005). The epidemiological studies in the various populations in the world that have been established a noticeable difference in the prevalence of the DM and IGT in the different countries, the ethnic groups in the same country with same ethnic group before and after migration from their countries of the origin to the new world. Contrary to the traditional belief that DM is the disease of the rich and developed world, high prevalence rates of DM in the developing countries have been reported (Ajlouni and Jaddou Batieha 1998).Over the last half century there has been rapid development of the socioeconomics many countries which result in the shifting from traditional to the modern way of the life. The behavior of the population has been changed as consumption of higher fat in the diet while decreased physical activity. The physical activity has been accompanied the advantage of the modernization. These changes in the physical activities and diet have been participated with increasing long life. The prevalence of the type II

[++]Corresponding author, Syed Qararo Shah, Cell No: 03363138358, Email: shahsb29@yahoo.com

*Department of Fresh Water Biology University of Sindh,

**Nutrition International,

***School of Public Health Hyderabad Health Department Government of Sindh.

has been increased dramatically in the developing and developed countries. On the other hand, prevalence of different degrees of the glucose intolerance, i.e. Type II diabetes impaired glucose intolerance and impaired fasting glucose varies between the populations. This unevenness has been recognized to differences in genetic vulnerability, population age arrangement, degree of the development of the socioeconomic and the dietary habits , level of the another other risk factors, Certain ethnic groups, Particularly Mexican American, North American, Indian, Micronesian, Australian Aborigines and Polynesian Pacific Islanders are highly vulnerable to developing intolerance of glucose. There life style has been changed from traditional to a more modernized pattern (Soderbrg *et al.,* 2005). The worldwide prevalence of the diabetes is 4%; this approximately 143 million people has been affected. The prevalence will be 5.4% by year 2025 and the worldwide diabetic population which will be 300 million and 77% global burden of the diabetes in the developing countries (Park 2004). The incidence of the insulin dependent Type I in the children and phenomenon of increasing rates in the recent decades are reported for the UK, Finland, Europe and rest of the world (Feltbower *et al.,* 2002). The diabetes Type II is one of the major non communicable diseases in the world (Duc Son *et al.,* 2004). Numerous studies have been reported that women with gestational diabetes mellitus have a considerable risk of the developing diabetes type II later in the life. (Anders, Aberg *et al.,* 2002). The increasing prevalence of the diabetes melletes makes it a rising contributor to premature mortality, morbidity and health care costs. The diabetes predisposes patients to wide range of acute and chronic conditions severely affecting quality of life and resulting in excess mortality. The type II diabetes accounted for the 90-95% of the all 17 million diagnosed cases of the diabetes in the US which has been reported by the American diabetes association. The UK Population approximately 3% has diabetes mellitus and increasing prevalence. The recent has been shown 50-65% of the patients which were under the sole care of the general practices for their diabetes. The diabetes has been reported more prevalent in urban than rural populations. Migrant Indians in different parts of the world have been shown higher risk of diabetes type II may be due to living changes and environment factors. The urbanization and urban migration is a risk factor for the diabetes that is reported by WHO.

Mostly the increase in the diabetes is in the USA, Asia and Africa. The Pakistan have highest prevalence is in the urban female 45-65 years of age and 15% is in the male and 6.8% rural female[20]. Overall Pakistani 10 % population has been impaired glucose tolerance and 12% prevalence of diabetes mellitus (Fatima 2003).

2. MATERIAL AND METHODS

It was a cross sectional study which was conducted during OPD hours. This study was carried out on 166 diabetic patients, who attended the diabetic clinic of Isra University welfare Hospital during the period 1st to 31st August 2019.The pre tested questionnaire, designed in English language but the questions from the patients were asked in local language by the principal investigator by him and the findings were recorded. For this study the patients who attend the ISRA University welfare Hospital diabetic clinic were included. This University is situated at Hala Naka Road Hyderabad, near National highway by pass. This study well involved a sample of urban & rural patients. All patients attended the diabetic clinic of Isra. University welfare hospital with symptoms of diabetes. All known diabetic patients or those diagnosed at the clinic as diabetic irrespective of their age & sex were included in the study. All non-diabetic patients were excluded from the study. Informed consent from the patients were taken and data was analyzed by using SPSS Version 21.

Table 1. Sociodemographic Parameters of Diabetic Patient

S.#	Socio demographic Parameters		Result
1	Age Groups	10 – 39 age	12
		40 + age	154
2	Per month income	5000 -9000	160 (96%)
		10000 – 15000	6 (4%)
3	Gender	Male	58 (35%)
		Female	108 (65%)
4	Occupation	Working	141(85%)
		Non-working	25(15%)
5	Level of Education	Formally Educated	38(23%)
		No formal Education	128 (77%)
6	Marital status	Married	164 (99%)
		Unmarried	2 (1%)
7	Locality	Urban	104 (63%)
		Rural	62 (37%)

8	Food Habbits	Rich in Carbohydrate	164 (99%)
		Rich in Protein	2 (1%)
9	Family History of Diabetes	Yes	84(51%)
		No	82 (49%)
10	Perform Exercise	No	159 (96%)
		Occasional	7 (2%)
11	Duration of Disease	Newly Diagnosed	8 (5%)
		More than 6 months	158 (95%)

The results were summarized and showed gender wise locality of the patients, from these 166 patients 104 (62.65%) were from urban areas, 62 (37.34%) were from rural areas. From 104 urban patients 29 were male and 75 females and from 62 rural patients 28 were males and 34 females. There was significant difference between rural and urban population attending the Isra University Welfare Hospital Diabetic Clinic. The locality wise marital status of the patients. From 104 urban patients 103 ware married and 01 unmarried and from 62 rural patients 61 were married and 01 was unmarried. Majority of the patients were from lower socioeconomic group.

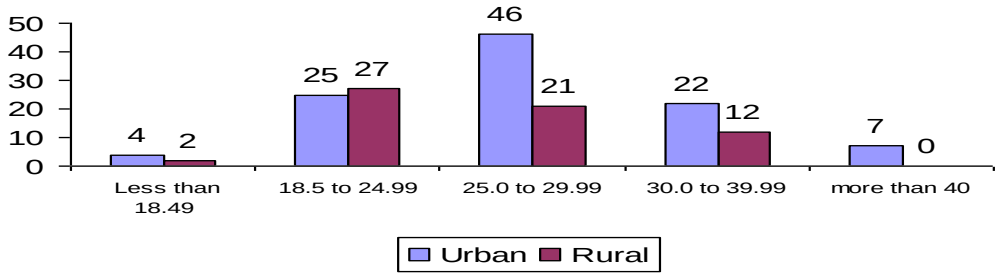

Fig. 1: Locality Wise BMI Of The Patients

The locality wise BMI ranges of the diabetic's patients. Less than 18.49, 04 were urban and 2 rural, 18.05 to 24.99, 25 were urban and 27 rural. 25.0 to 29.99 46 urban & 21 rural. 30.0 to 39.99 22 were urban & 12 rural. More than 40 there was no rural but 7 were urban and the BMI ranges of the diabetics patients. Less than 18.49 were 03 males & 03 females. 18.05 to 24.99 were 20 males & 32 females. 25.0 to 29.99 were 26 males & 41 females. 30.0 to 39.99 were 8 males & 26 females. More than 40 there were no male but 7 females. The urban mean BMI is 28.3212. While rural mean BMI is 25.6348.

Table 2. Locality and gender wise mean age and standard deviation of the patients.

Sr.N	Parameters		Mean	Total	Std Deviation	Total
1	Locality wise Mean	Urban	48.2404	27.7048	11.58128	12.46487
		Rural	46.8065		13.87395	
2	Gender Wise Mean	Male	52.7544	27.7048	12.48182	12.46487
		Female	45.0642		11.66609	

The mean age of the urban diabetics is 48.2404 while rural diabetics mean age is 46.8065. The mean age is 52.7544 and female mean age is 45.0642. The locality wise frequency of diabetes was 62.7% were from urban areas and 37.3% from rural areas.

Table 3: Locality and Gender wise Random Sugar levels of the diabetic patients

Gender wise		Mean	N	Std. Deviation	Locality Wise	Mean	N	Std. Deviation
1	Male	246.7885	58	95.11287	Urban	246.7885	104	96.82149
2	Female	231.6129	108	93.16027	Rural	231.6129	62	87.75662
	Total	241.1205	166	93.55872	Total	241.1205	166	87.75662
Random Blood Sugar mg/dl								
Total #.166	Minimum	82	Maximum	500	Mean	241.1205	Std. Deviation	93.55872

Table 4: Method of Diagnosis and Treatment

Sr. N	Parameters	Types	Results
1	Method of Diagnosis	Routine Check Up	1 (.6%)
		Self-Enquiry	3 (1.8%)
		Physician Advice	162 (98%)
		Accidental	0 (0%)
2	Final Diagnosis	Type-I	3 (1.8%)
		Type-II	161 (97%)
		Gestation	2 (1.2%)
		Others	0 (0%)
3	Type o Treatment	Oral Hypoglycemic	140 (84.3%)
		Oral Hypoglycemic + Insulin	8 (4.8%)
		Insulin	4(2.4%)
		No Treatment	14 (8.4%)

From urban patients 51% were with positive history and 49% with negative and from rural patients 50% were positive family history. The frequency of diabetes mellitus in the subjects. 1.8% were type 1 diabetes, 95.78% type 2 and 2.4% gestational diabetes. Males were 57 (34.3%) and females 109 (65.7%) were diabetic. In urban subjects 0.96% were diagnosed in routine checkup, 1.92% by self-enquiry,97.11% by physicians advise, while in rural patients 1.61% by self-enquiry and 98.38% by physicians advise. Final diagnosis of the patients. In urban patients 97.11% were type 2 diabetics, 0.9% type 1 and 1.92% gestational diabetics. In rural patients 93.54% were type 2 diabetics, 3.22% type 1 and 3.22 gestational diabetics. The patients on oral hypoglycemic drugs are 146 (87.95%), on oral hypoglycemic and insulin are 12 (7.22%) and on insulin only 8 (4.81%).

3. DISCUSSION

Diabetes is a major global health problem and one of the leading causes of disability and death throughout the world. The incidence and prevalence of diabetes is on rise and it is predicted that it may acquire an epidemic form by the year 2025.Diabetes and its associated complications not only severely affect the quality of life of the patients resulting in great morbidity and mortality but also puts a great burden on the socioeconomic condition of not only the patient but the whole community. It is a major burden to the health services of the country. The present study was undertaken to determine the difference in the frequency of different types among the patients attending Isra University Hospital diabetic clinic from the surrounding Urban and Rural areas. A total of 166 patients attended the diabetic clinic during the period of this study which extended from 1st August to 31st August 2019, Of these 104 about(62%) belong to the urban areas while 62 (37%) were from rural areas . This reveals that the frequency of diabetes is much higher in urban than rural population. Diabetes mellitus is more prevalent in urban than rural population.

Similar results are shown by various other researchers ·It is suggested that this is due to urbanization which is associated with changes in the number of life style factors such as physical inactivity, unhealthy diets and obesity. It has been attributed this to changing life style including increased stress [5].Out of 104 patients from urban areas 75 (72%) were females while out of 62 patients from rural areas 34 (54.8%) were females so in present study there was preponderance of female diabetes from both urban and rural population. There is a female predominance among diabetes in low income groups [28].Females have a significantly higher prevalence of diabetes in all age groups both in urban and rural areas [18].Population of undiagnosed diabetes is significantly higher in women than men [4].In the present study 64 patients (38.55) belong to the age group 30-49 years while 76 patients (45.78%) were of the age group 50-69, over all about 85 % of the patients were between the ages of 30-69 years. The increasing age is associated with increased incidence of diabetes. There is high prevalence of diabetes mellitus in older white British men and women There is strong evidence that obesity and physical inactivity that are associated with aging are powerful risk factors for diabetes. The prevalence of diabetes increase with age and maximum prevalence is found in subjects above the age of 65 years. Diabetes prevalence increase with age, with the subjects over 50 years of age and prevalence reaches about 10% [11].In present study a large number of patients with non-insulin depended diabetic patients belonged to younger age group and most of them a positive family history was found. There is inversely strong relationship between the power of the family history and age of onset of the diabetes[4,2].In present history there was significant difference in urban and rural population. A large population of the India who have diabetes in family history in first and second degree relatives also that NIDDM in Indian patients occur at a younger age when compared with European population. It may be due to genetic mechanisms are stronger and are implicated. In present study there was no difference in population of the patients with positive family history between urban and rural population. BMI is an important risk factor for NIDDM. In present study about 65% of the patients had a BMI higher than

normally accepted values. There is no any association of BMI with prevalence of diabetes mellitus [18].Obesity is most powerful risk factor for NIDDM which was reported by second WHO expert committee.. Its two most important experts are its extent and duration (1980). Parameters significantly associated with diabetes are BMI, age, higher income and physical activity. According to nutrition survey perform Huchi Minh City from 1996-2000. The obesity prevalence of adult is higher in the female and increase with age, such changes may be responsible for diabetes. In this study majority of the diabetic patients from urban 86% and rural 91% belonged to the low socioeconomic group with monthly income of less than 5000 rupees. The possible explanation for this was the fact that this study was carried out at the diabetic clinic of Isra University which is a welfare organization and mainly poor people visit it. One of the parameter significantly associated with diabetes was higher income. Prevalence of diabetes and IGT is significantly lower in low income group, as compared with higher income group [28].Prevalence of type II diabetes greatly increased in deprived people of low socio economic status, there is clear increase in BMI with increasing deprivation [29].In the present study subjects from urban 80 (76.9%) and rural 48 (77.4%) were illiterate. There was no difference in the education status of diabetic patients belonging to the urban and rural areas. To determine the frequency of various types of diabetes among urban and rural population was the important aspect of the present study. The frequency of type I diabetes in urban population was about 1% and that in rural population was 3.5%. Type I diabetes is rare in developing countries with frequency of 0.2-20% of all diabetic patients [5].Incidence of type I diabetes in Pakistan was very low. Incidence of diabetes increase with age. Incidence is higher in males than in females . Type I incidence is lower in urban areas than in rural areas[11]. Incidence of type I diabetes increases with age [10].Young patients having high mortality risk in type I diabetes than type II diabetes (Urbonaite and Zalinkevicius 2000). Type II diabetes is much common form of disease and results from combination of genetic and environmental factors. Some of the possible factors which cause variation in the rates of this diabetes include geographic regions, migration, ethnic susceptibility, genetic factors, diet, socio cultural factors, physical activity, stress, sex obesity age, uniformity and insulin resistance [5].There is a high prevalence of type II diabetes in urban as compared to rural population. Despite similar BMI the diabetes prevalence increase with increase ages both for urban and rural areas. but the increment was almost 3-5 folds higher among the urban population compared with rural in all age groups both among male and females [18].Type 2 is more in urban than rural population but proportion of undiagnosed diabetes is higher in rural than urban areas [4].Difference in the prevalence of diabetes II in urban and rural areas have been demonstrated in many studies but in the present study the prevalence of diabetes in urban areas was only slightly and not significantly higher than that in rural areas [11].Frequency of gestational diabetes increases with age ranging for 0.1% in the 20-24 year old age group to 1.2 % in those of age 35 years are greater. Female subject there is significantly higher proportion of diabetes in those with a history of gestational diabetes or having an LGA compared with those in the norm glycemic group.

4. CONCLUSION

Finally it is concluded that DM is more frequent in urban areas as compared to rural areas. The incidence is more in females than in males. Frequency increases with increasing age. Despite common belief it is a disease of rich, it is more common in low socioeconomic group. The most frequent and predominant type of diabetes in both rural and urban areas is type II diabetes mellitus. There was no difference in mean ages, mean BMI, socio economic classes, family history, physical activity, dietary habits and education of the diabetic patients between urban and rural areas.

REFERENCES:

Al-Lawati J. A., A. l. Riyami A. M, Mohammad A. J. and P. Jousilahti (2002) increasing diabetes mellitus in Oman. Diabet. Med. 19: 954-957.

Ajlouni K. and H, Jaddou Batieha (1998) A. Diabetes and impaired glucose tolerance in Jordan: prevalence and associated risk factors. J Internal Med; 244: 317-323.

Anders, Aberg E.B, K. Eva I Jonsson, Eskelsson L Oslen H., Anders (2002) Predictive factors of developing diabetes mellitus in women with gestational diabetes. Acta Obstetricia et Gynecologia Scandinavica. 81: 11 Pp.

Dong Y., W. Gao H. N H. Yus (2005) Prevalence of Type 2 diabetes in urban and rural Chinese populations in Qingdao, China. Diabetic Medicine.

Duc Son L.E.N.T., K. Kusama N.T.K. Hung. (2004) Prevalence and risk factors for diabetes in Ho Chi Minh City, Vietnam. Diabetic Medicine.21: 371.

Eavns JMM, (2000) Newton RW, Rutas DA, Mac Donald TM, Morris AD. Socioeconomic status, obesity and prevalence of type 1 and 2 diabetes mellitus. Diabet Med 17: 478-80.

Eliasson M., and B. Lindahl (2002) No increase in the prevalence of known diabetes between 1986 and 1999 in subjects 25-64 years of age in northern Sweden. Diabet. Med. 19: 874 Pp.

Feltbower R.G., P. Mckinney J Houghton J. Stephenson D Haigh. (2002) Trends in the incidence of childhood diabetes in south Asian and other children in Bradford, U.K. Diabetes Medicine, 19: 162 Pp

Foster D. W. (2000) Diabetes mellitus. In: Isslebacher KJ, Braunwald E, Wilson JD, Martin AS, Kasper DL, editors. Harrison's Principles of internal medicine. Vol 2, 15th ed. New York: Mc Graw-Hill, 1997-2000.

Fatima J. (2003) Diabetes in Pakistan. Diabetes Voice.48: 12 Pp

Hussain A., M.A, Rahim, A. Khan (2005) Type 2 diabetes in rural and urban population: divers prevalence and associated risk factors in Bangladesh. Diabetic Medicine.22: 931 Pp.

IlyasM,Khan I.A, G. Malik M. Mubasher (2000) Community Medicine and Public Health 5th edition. Time Publisher Urdu Bazar Karachi : 1074 Pp.

Levitt N.S, K. Steyn E.V. Lambert (1999) Modifiable risk factors for type 2 diabetes mellitus in a community in South Africa. Diabetic Medicine, 16: 946Pp.

Mashrani U. (2004) Diabetes mellitus and hypoglycemia in Tierny LM Jr, McPhee SJ, Papadakis MA, editors. Current medical diagnosis and treatment. 43rd edition. New York: Mc Graw- Hill, 1146-90.

Molyneaux L, and Y. D. Constaintino (2004) strong family history predicts a younger age of onset for subjects diagnosed with type 2 diabetes. Blackwell Diabetes, Obesity and Metabolism, 6, 187-194.

Morgan C.LL., C.J. Currie N.C.H, Stott Simthers (2000) Estimating the prevalence of diagnosed diabetes in health district of Wales: the importance of using primary and secondary care sources of ascertainment with adjustment for death and migration. Diabetic Medicine,17: 141Pp.

Marsha A.D, R. Billie R David D. Jennifer (2004) and clinical Disparities in Hospitalized Patients with Type 2 Diabetes. J of Nursing Scholorship.36:.

Memon A. Q. (2000) History of diabetes mellitus. Med Channel 6 (3): 6nnv

Macfarlane I. (2000) The history of diabetes. In: John P & Williams EDS. The textbook of diabetes 1999. Cited in Memon A.Q. History of diabetes mellitus. Med Channel ; 6 (3): 6-7.

Park, K.. (2004) Park's textbook of preventive and social medicine. 24th edition. Banarsid as Bhanot publishers 1167, Prem Nagar , Jabalpur, 482 001 .

Ramaiya K. L., VRR. Kodali KGMM. Alberti (1990) Epidemiology of diabetes in Asians of the Indian Sub-continent. Reprinted from diabetes metabolism review. 6: 125-146.

Ramachandran A., C. Snehalatha P. Shymala (1994) High prevalence of NIDDM and IGT in an elderly south Indian population with low rates of obesity. Diabetes care 17: 1190-92.

Soderbrg S., P. Zimmet J Toumilehto M. Courten G. Dowse P Chiston (2005) Increasin prevalence of type 2 diabetes mellitus in all ethnic groups in Mauritius. Diabetic Medicine 22: 61.

Thomas M. C., M. K. Walker J.R, Emberson A. G. Thomas D.A. Lawlor (2005) Prevalence of undiagnosed type 2 diabetes and impaired fasting glucose in older British men and women. Diabetes UK, Diabetic Medicine, 22: 789-793.

Urbonaite B and R Zalinkevicius (2000) Green A. Incidence, prevalence and mortality of insulin-dependent (type 1) diabetes mellitus in Lithuanian children during 1983-98. Pediatric Diabetes. Vol. 3 Issue 1 23Pp

Wallymahmed M.E, S. Dawes G. Clarke S Saunders S. (2005) Hospital in-patients with diabetes: increasing prevalence and management problems. Diabetic Medicine, 22: 107Pp

Whitford D.L and S.H. Roberts (2004) Changes in prevalence and site of care of diabetes in health district 1991-2001. Diabetic Medicine. 21: 640 Pp.

Wills T. (2000) Pharmacullica rationalis sive diatriba de medicamentorum operationitus in humano carpore. London: 1674 – 5. Cited in Memon AQ. History of diabetes mellitus. Med Channel 6 (3): 6-7.

William G., J C.H Pickup (1999) book of diabetes second edition. 4-5 1992,1999 by Blackwell Science Ltd Editorial Office Oseny Med, Oxford OX2 OEL 25 John Street, London WC in 2BL