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Diabetes among Women in Urban and Rural Population- A Cross Sectional Study

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ABSTRACT

There is increased incidence of diabetes across the globe. Though Diabetes is under talked about in India, its impact on women is not highlighted enough. This study was undertaken to learn the prevalence of Diabetes Mellitus among women in urban and rural population along with associated risk factors in the development of Diabetes Mellitus. A detailed history, clinical examination along with fasting blood sugar, mini glucose tolerance test and lipid profile were done to 598 urban and 452 rural women in and around Tumkur (Karnataka, India). Of the total 1050 subjects 192 were in pre diabetic stage and 221 were found to be diabetic. Among the urban group 144 (24.08%) were found to be diabetic and 114 (19.06%) pre diabetic and in this group High BMI was in 81 (31.39%) with Hypertension in 62 (24%) and abnormal lipid profile in 38 (14.72%). Among rural group 77 (17.03%) were found to be diabetic and 78 (17.25%) pre-diabetic and in this group BMI was found to be high in 31 (20%), Hypertension was detected in 24 (15.48%) and lipid profile abnormality was found in 22 (14.19%).Our study found pre diabetic, diabetic, hypertension, high BMI, abnormal lipid profile were all high in urban women.

Keywords:Prediabetes, Diabetes Mellitus, rural and urban women population, risk factors for Diabetes Mellitus.

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INTRODUCTION

India is the world's unchallenged diabetic capital. India is on ascending curve of the diabetic epidemic. The prevalence of Diabetes Mellitus is growing rapidly and is reaching epidemic proportions [1]. IDF (International diabetes federation) report says women are the worst affected by this disease. In 2010, one million more women than men had diabetes (143 million women versus 142 million men). The difference is expected to increase to 6 million by 2030 (222 million women versus 216 million men) [2]. 80% people with diabetes live in low and middle income countries. 183 million people (50%) go undiagnosed. Diabetes caused 4.6 million deaths in 2011 [3]. In India in 2011 there were 61.3 million people with Diabetes in the age group 20-79 years and this number is expected to be 101.2 million by 2030 [3].

Diabetic epidemic could be prevented through proper education about nutrition, physical exercise and maintenance of ideal body weight since childhood itself. The study was undertaken to look for pre-diabetic and diabetic status among urban and rural women population as women health tend to be neglected both by her and family members. We intend to create awareness among women regarding their health focussing on nutrition, physical exercise, prevention and control of hypertension, maintaining ideal lipid profile and BMI.

MATERIALS AND METHODS

A cross sectional study of 598 urban and 452 rural women in and around Tumkur city was conducted over a period of 3 months. Elaborate history was taken which included the economic status, occupation, family history, obstetric history, physical exercise history apart from routine data. A detailed clinical examination along with measurement of BMI was done. Every subject underwent following biochemical testing - Mini glucose tolerance test, Fasting lipid profile and Fasting blood sugar, Post prandial blood sugar for known diabetics. Statistical analysis was done by using epiinfo [7] and Microsoft excel 2007.

RESULTS

Of the total 1050 women studied   598 (56.95%) were urban and 452 (43.04%) were rural. All women were in the age group of 10 years and above. Among them 220 (20.95%) had attained menopause.

In the urban group 45 (67.72%) were Hindus, 178 (29.76%) were Muslims and 15 (2.5%) were Christians. Socio economic status was lower middle among 356 (59.53%) Among them vegetarians were 181 (30.26%) and mixed diet were 417 (69.73%). Unemployed were 337 (56.35%) whereas working were 261 (43.64%). Married women were 517 (86.45%). There were 118 (19.73%) people suggestive of Diabetes in the form of loss of weight, increased frequency of micturition, increased thirst, excessive eating or pelvic inflammatory disease. History of Gestational Diabetes was found in 42 (7.01%). Family history of Diabetes was found in mother 66 (11.03%), father 50 (8.36%), siblings 37 (6.18%) and both father and mother in 90 (15.05%). History of physical exercise was present in the form of walking in 47 people. Our study showed that 338 (56.52%) had BMI ≥25 kg/m2.

Hypertension first time detected and/or on treatment were 174 (29.09%). Diabetes was found among 144 (24.08%), Mini GTT was found to be positive for Prediabetic status (FBS-100-125 mg/dl, PPBS-140-199 mg/dl) in 114 (19.06%). Lipid profile abnormality either in the form of increased total cholesterol, LDL, VLDL, Triglycerides or decreased HDL was found in 353 (59.03%) and even diabetic were 38 (14.72%).

In the rural group 306 (67.69%) were Hindus, 141 (31.19%) were Muslims and 5 (1.1%) were Christians. Socio economic status was lower middle in 298 (64.98%) Among them vegetarians were 154 (34.07%) and mixed diet were 298 (65.92%). Unemployed were 272 (60.17%) whereas working were 180 (39.82%). Married women were 136 (30.08%). There were 37 (8.1%) people suggestive of Diabetes in the form of loss of weight, increased frequency of micturition, increased thirst, excessive eating or pelvic inflammatory disease. Gestational Diabetes was found in 22 (5.12%). Family history of Diabetes was found in mother 33 (7.3%), father 36 (7.4%), siblings 29 (6.41%) and both father and mother in 53 (11.72%). History of physical exercise in the form of walking was seen in 54 (11.94%) among them majority were in the form of agricultural work (30 people). Our study showed that 167 (36.94%) had BMI ≥25 kg/m^2 and even diabetic were 31 (20%). Hypertension first time detected or/and on treatment were 157 (34.73%) . Diabetes was found among 77 (17.03%), Mini GTT was found to be positive for Prediabetic status (FBS-100-125md/dl, PPBS-140-199) 78 (17.25%). Lipid profile abnormality either in the form of increased total cholesterol, LDL, VLDL, Triglycerides or decreased HDL was found in 276 (61.06%) and even diabetic were 22 (14.19%)
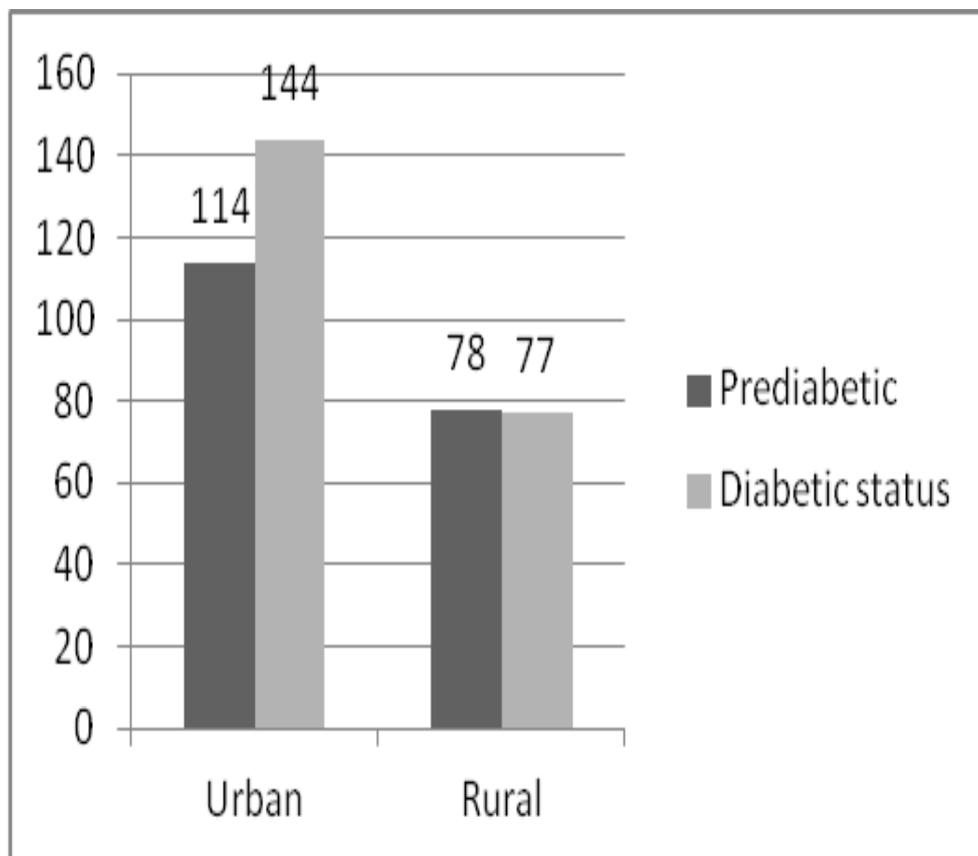
Table 1 : Age wise distribution of Diabetic and Prediabetic in Urban population.
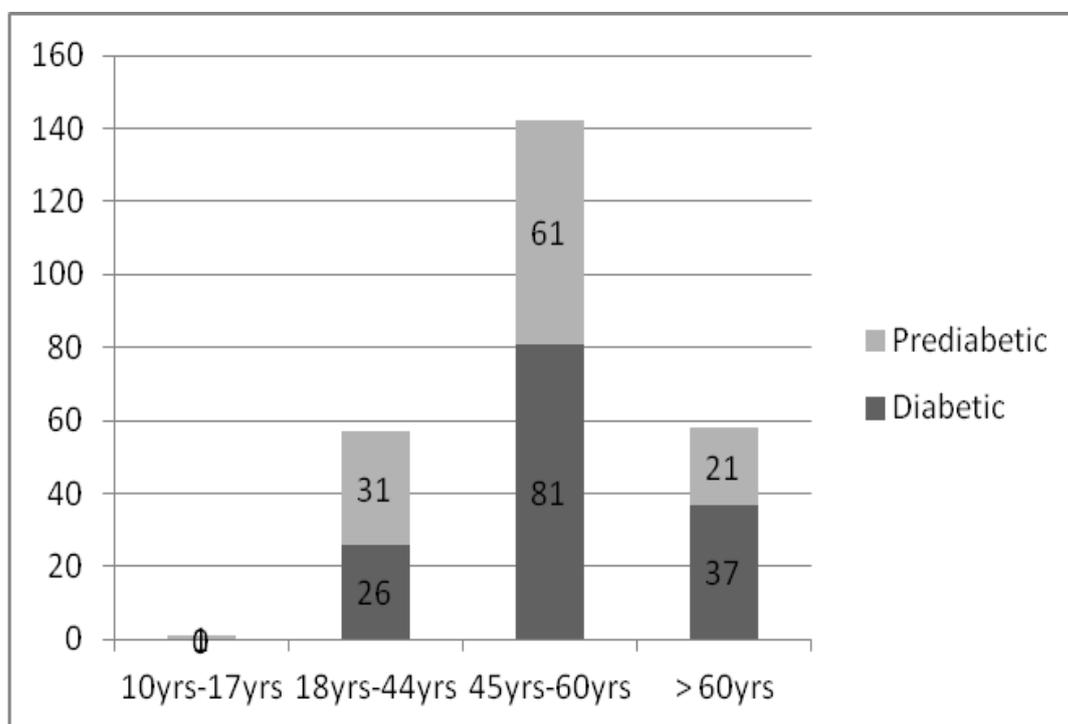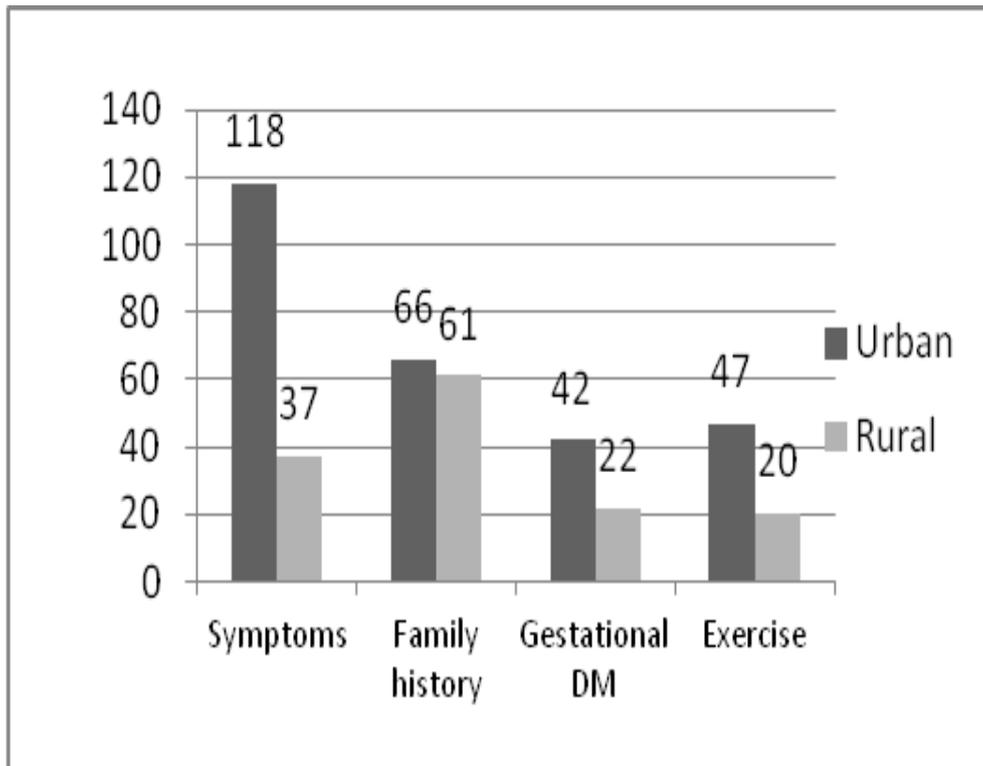
Table 2 : Age wise distribution of Diabetic and Prediabetic in Rural Population
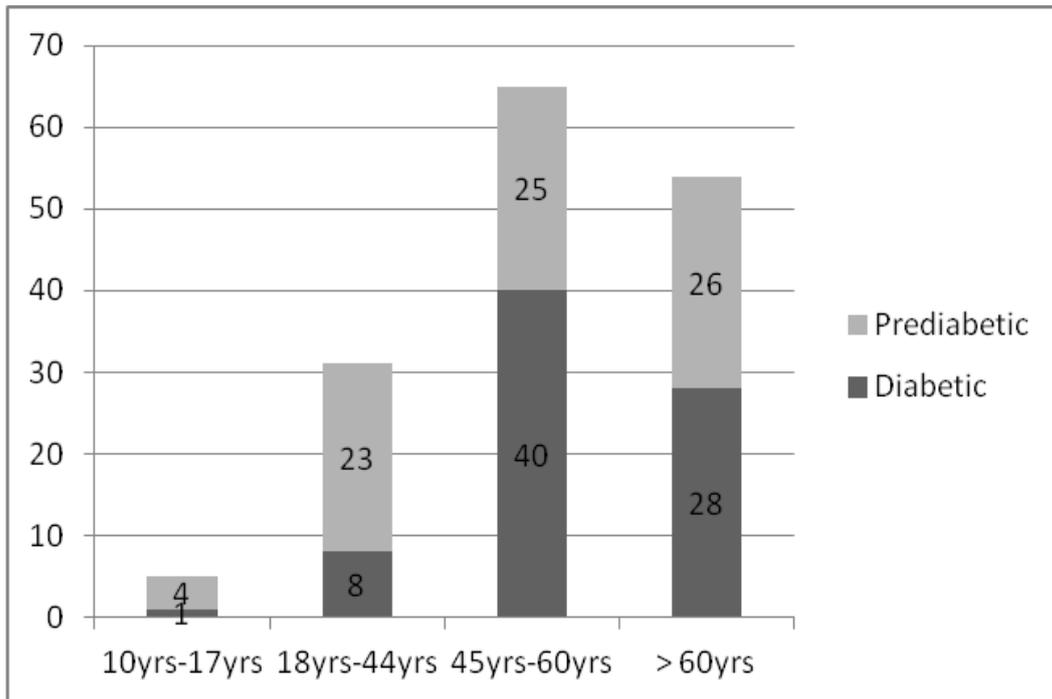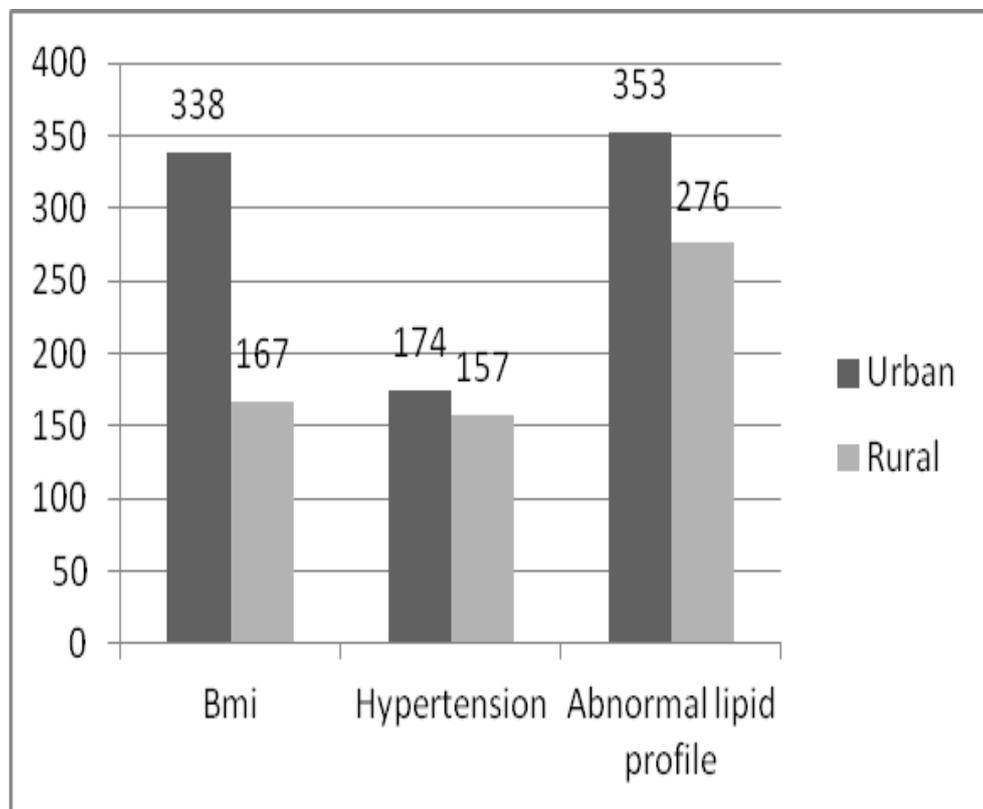

Table 3 : Prediabetic and Diabetic status distribution among Urban and Rural women

Table 4 : History in favour of Diabetes and distribution among urban and rural women

Table 5 : Comorbidities among Urban and Rural women

DISCUSSION

Diabetes is a major health problem that imposes a serious burden on individuals and on society [4]. Approximately 742 million people in India live in rural areas [5]. Whereas awareness of chronic diseases is extremely low [6] and ratio of unknown to known diabetes is 3:1 (compared to 1:1 in urban areas) [7]. Crude estimates suggest that type 2 diabetes prevalence in rural areas is much lower (approximately 25-50%) than in urban areas [8]. Many risk factors for diabetes (weight gain, obesity, lack of physical activity) are more common among women than men in all population subgroups [9]. The Public Health Service Task Force Report on women's health states that "Societal attitudes towards females, socialization of girls and women, differing economic and occupational status between men and women and among women, as well as changing attitude towards the family, sexual behaviour and living arrangements all have implications for women's health [10]. In India, diabetes is a result of societal influences and changing lifestyles. There is significantly increasing trend in urban populations while among rural population the prevalence is increasing at a slower rate. In large cities in north and south India prevalence range is from 8-15 %. [11] The risk for cardiovascular disease, the most common complication attribute to diabetes, is more serious among women than men. Notably women with diabetes lose their premenopausal protection from ischemic heart disease and have risk for this condition as great as or greater than that of diabetic or nondiabetic men. Furthermore, among people with diabetes who develop ischemic heart disease, women have worse survival and quality of life measures [12].

Diabetes is a serious health condition that affects women in all life stages. It is unique to women because it can affect the health of both mother and her unborn children.

In adolescent years, the challenges are lack of diabetes education and prevention materials, lack of awareness of need for weight control and a plethora of fast food and other unhealthy eating options. The adolescent years (10-17 years) are marked by major biological and psychosocial changes that transform adolescents into adults. Primary prevention of type 2 diabetes is key at this life stage as is instituting lifelong healthy behaviours related to physical activity and nutrition.

In the reproductive years (ages 18-44 years) represents the life stage when women experience significant personal growth and increasing responsibility- marriage, career development and child rearing. They face significant barriers to self care which results in limited time for physical activity, healthy eating patterns and attending to their own health care needs. Prenatal, post partum and other reproductive health services represent important vehicles for identifying and instituting preventive care for women at high risk for diabetes in this age group.

The middle years (ages 45-60 years) are noted by major physiological events such as menopause. During this life stage, some of the major barriers to preventing diabetes and its complications are similar to those in the reproductive years. Needs of children, grandchildren and aging parents may influence self care. Middle age is a time when women are most active in civic and religious organisations, an ideal opportunity to deliver prevention messages, interventions and support.

The older years (ages 60 and over) are a time when women with diabetes become even more vulnerable to chronic illness, disability, poverty and loss of social support systems. Opportunities for prevention lie in the increased frequency of health care visits among the elderly for diabetes and co morbidities [13].

Our study showed risk factors for diabetes- family history of diabetes, lack of physical exercise, overweight and abnormal lipid profile which contributes to diabetes were high among urban women. Though rural women did not give any history of extra physical exercise their life style included working in the farms and engaging in house hold works. Diet of urban women included junk foods which the rural women lack. Gestational diabetes was more common in urban women probably because of their regular ante natal checkups. Abnormal lipid profile in the form of high total cholesterol, high triglycerides, high LDL, high VLDL and low HDL was frequently seen in urban women owing to their life style- sedentary way of living, diet with high fats and over weight for their age. Our study showed family history of diabetes an important risk factor for the development of diabetes. History of mother being diabetes contributed to the daughter being diabetes.

CONCLUSION

Modifiable risk factor such as high BMI, abnormal lipid profile, sedentary life style contribute to the development of Diabetes Mellitus. Prediabetic state a major predictor of developing overt diabetes is an important factor to be considered. Taking care of the risk factors and prediabetic status with regular screening and health education definitely will prevent the development of diabetes. Risk factors if taken care along with the control of diabetes will prevent the complications of diabetes. Health awareness among women is very important in taking care of health of society.

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