



Original article

Determination of the Prevalence of Type 2 Diabetes Mellitus among Perimenopausal Women in An Urban Slum of Mumbai

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ABSTRACT

Introduction: The population in India has an increased susceptibility to Diabetes mellitus. The changes occurring at or after the menopause are increased insulin resistance, decreased insulin secretion, decreased insulin elimination and increased android fat distribution. So, this study has been undertaken to assess the prevalence of Diabetes mellitus in perimenopausal aged women of 40 to 50 years in an urban slum. **Materials and methods:** The cross-sectional community-based study was conducted in slum area during January 2012 to June 2013. Sample size was 450. Females not aware about their diabetic status were screened for fasting blood glucose level and oral glucose tolerance test by semiautoanalyser. Remaining females reporting physician diagnosis of Diabetes mellitus were confirmed from medical records. **Results:** The prevalence of Diabetes mellitus among perimenopausal women was 13.6%. 56.7% of the subjects were between 45 to 50 years and 43.3% were between 40 to 45 years of age. 82.7% were Muslims. 83.6% subjects were married. Majority 47.8% belonged to joint family. 45.6% belonged to Class IV socio-economic status and 19.8% belonged to Class V socio-economic status. 61.1% of the subjects were illiterate. 68.9% of the subjects reported that they were not working aside from doing their own housework. **Conclusion:** The prevalence of Diabetes mellitus among perimenopausal women was 13.6% in an urban slum of Mumbai.

KEYWORDS: Diabetes mellitus, Prevalence, Perimenopausal Women

INTRODUCTION

Diabetes mellitus is an 'ice-berg' disease. Diabetic patients, if undiagnosed and inadequately treated, develop multiple chronic complications leading to irreversible disabilities and death. More than 90% of the cases of Diabetes mellitus are type 2 Diabetes mellitus.[1] India is currently experiencing an epidemic of diabetes mellitus [2]. Data available shows rising pattern in the prevalence of type 2 Diabetes mellitus in India both in urban as well as rural areas. The population in India has an increased susceptibility to Diabetes mellitus.

Early detection and appropriate treatment are the cornerstones for delaying the onset and progression of the diabetic complications. Studies suggest that Diabetes mellitus is no longer a disease of the affluent or rich man's disease. It is becoming a problem even among the middle income and poorer sections of the society. Studies also have shown that the poorer diabetic subjects are prone to

complications as they have little access to quality health care.

The decline in estrogen concentrations at the menopause has some adverse effects. The changes occurring at or after the menopause are increased insulin resistance, decreased insulin secretion, decreased insulin elimination and increased android fat distribution [3]. Few community studies have been conducted in the perimenopausal age group with varying definitions of perimenopausal age. For the present study, the perimenopausal age was considered to be 40-50 years [4]. Taking into consideration the above factors, a study has been undertaken to assess the prevalence of Diabetes mellitus in perimenopausal aged women in an urban slum.

MATERIALS AND METHODS

Administrative approvals:

The necessary approvals were obtained from the following authorities to carry out the study.

- i) The Dean of Parent Medical College.
- ii) Ethics committee of Parent Medical College
- iii) Professor and Head, Department of Community Medicine, Parent Medical College.
- iv) In-Charge of the Urban Health Centre.

Study area: The study was conducted at an urban slum Shivaji nagar which is a field practice area of Department of Community Medicine of Topiwala National Medical College, Mumbai. This slum consists of 50 plots (1 to 42, 43, 43A, 44 to 49). Each plot is divided into two parts. Each part has 10 lines, these lines are numbered from A to K (except I) on left side and from L to U on right side. Each line has 9 houses numbered from 1 to 9. Total 180 houses are there in each plot. Total population of study area is approximately 84,783.

Study design: The present study is a cross-sectional community-based descriptive epidemiological study.

Duration of study: The Study was conducted during the period of January 2012 to June 2013.

Calculating Sample size: Total population of study area was 84,783. Female population between 40 to 50 years was 10.1% . So female population between 40 to 50 years in study area was 8,563. (Applying national demographic parameters)[1]. Taking 5% of perimenopausal women of 40 to 50 years = 428.15. It was divided among 50 plots equally – $428.15/50 = 8.56 = 9$. So, 450 perimenopausal women were included in the study.

From each plot, with the help of systematic random sampling method every 20th house was selected for the study, with a random start. All the females in age group 40 to 50 years in selected households were included for the study, till the sample size was met.

Females who were not aware about their diabetic status were screened at Urban Health Centre for fasting blood glucose level and oral glucose tolerance test [5] by semiautoanalyser. In the remaining females who had reported physician diagnosis of Diabetes mellitus, the diagnosis was further confirmed by checking for one of the evidence of disease like blood sugar report, medical record or prescription from physician or medicines.

Statistics: The prevalence was expressed in percentage.

RESULTS

As per table 1(a), 56.7% of the subjects were between 45 to 50 years followed by 43.3% who were between 40 to 45 years of age. Most of the subjects i.e. 82.7% were Muslims followed by 17.3% who were Hindus, as per table 1(b). 83.6% subjects were married 16.4% subjects were single including widow, divorced, unmarried, as per table 1(c). Majority 47.8% belonged to joint family, 20% subjects belonged to nuclear family and 32.2% subjects belonged to three generation family, as per table 1(d).

As per Modified B.G. Prasad classification 6.4% subjects were from Class I socio-economic status, 8.2% were from Class II socio-economic status, 20% were from Class III socio-economic status, 45.6% belonged to Class IV socio-economic status and 19.8% belonged to Class V socio-economic status in table 1(e).

According to table 1(f), 61.1% of the subjects were illiterate while 38.9% were literate. 68.9% of the subjects reported that they were not working aside from doing their own housework. 18% subjects were engaged in unskilled labour, 11.3% subjects were semiskilled, 1.4% subjects were engaged in skilled work, only 0.4% subjects were semi-professional, as per table 1(g). As per table 2, 9.8% subjects were already diagnosed with Diabetes mellitus and 3.8% were newly diagnosed cases. Therefore the prevalence of Diabetes mellitus among women in age group 40 to 50 years in this study was $9.8\% + 3.8\% = 13.6\%$.

Table 1: Sociodemographic profile of study subjects

Factor	Number	Percent
a. Age group(years)		
40-45	195	43.3
45-50	255	56.7
b. Religion		
Hindu	78	17.3
Muslim	372	82.7
c. Marital status		
Married	376	83.6
Single	74	16.4
d. Type of family		
Nuclear	90	20

Joint	215	47.8
Third generation	145	32.2
e. Socioeconomic status (Modified B.G.Prasad classification)		
Class I	29	6.4
Class II	37	8.2
Class III	90	20
Class IV	205	45.6
Class V	89	19.8
f. Literacy status		
Illiterate	275	61.1
Literate	175	38.9
g. Occupation		
Semi professional	2	0.4
Skilled	6	1.4
Semiskilled	51	11.3
Unskilled	81	18
Unemployed	310	68.9
Total	450	100

Table 2: Prevalence of Diabetes mellitus among study subjects

Diabetes mellitus		Number	Percent
Diabetic	Already diagnosed	44	9.8
	Newly diagnosed	17	3.8
Non-diabetic		389	86.4
Total		450	100

DISCUSSION

The age group 40-50 years is one of the important risk factors for many non-communicable diseases including Diabetes mellitus. In this study, 372 (82.7%) subjects were Muslims followed by 78 (17.3%) subjects who were Hindu. Religion wise distribution of study subjects is in contrast to NFHS III⁶ in which the percent distribution of women was 80.5 % Hindu and 13.6 % Muslim in India, in 2005-06. This was because the study population was mostly inhabited by Muslim population who have migrated from different states of India.

This study showed that 83.6% subjects were married and 16.4% subjects were single comprising of widow, divorced, unmarried. According to NFHS III⁶ in India 75.5% of women were currently married, 19.8% were never married, 3.2% were widowed and the remaining 1.4% were divorced, separated.

As the study was done in an urban slum, literacy rate in females was poor. According to NFHS III [6] in India 55.8% females in the age group 40-44 years and 59.0%

females in the age group in 45-49 years were illiterate in 2005-06. 68.9% of the subjects reported that they were not working aside from doing their own housework. Thus the majority of the study group comprised of housewives.

In this study, 9.8% were already diagnosed with Diabetes mellitus and 3.8% were newly diagnosed cases. Therefore the prevalence of Diabetes mellitus among women in age group 40 to 50 years was 9.8%+3.8% =13.6%. In the study conducted in 1992 by Bai PV et al [7], among 1198 persons in Chennai, the prevalence of known and newly detected type-2 Diabetes mellitus was 9.7% and 7.7% for respectively. In a study done by Kutty VR et al [8] in Neyyattinkara, Thiruvananthapuram district, Kerala state among 3899 adults, It was found that 76.5% of Diabetes mellitus cases were already diagnosed and 23.5% were newly diagnosed cases.

The ratio of known/new cases is a good indicator of improved availability of medical facilities for detection and treatment and the level of Diabetes mellitus awareness in a population. However, the high proportion of unknown cases

in many slum communities suggests widespread undeserving with respect to Diabetes mellitus health care.

CONCLUSION

The prevalence of type 2 Diabetes mellitus among women in age group 40 to 50 years in the urban slum of Mumbai was 13.6% consisting of already diagnosed 9.8% and newly diagnosed 3.8%.

Recommendations

1. Community based screening programme for type 2 diabetes mellitus - The diagnosis of the people with raised blood sugar should start early and appropriate actions can be taken especially in urban slums and socioeconomically deprived places.

2. The benefits of periodic arrangements of Diabetic Camp will go a long way in early detection of the cases at the community level especially in hard to reach areas.

3. Motivation: Women should be motivated to visit nearest public hospital for early diagnosis of type 2 diabetes mellitus.

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