INTRODUCTION

The World Health Organization (WHO) defined health in its broader sense in its 1948 constitution as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Now, at the dawn of the third millennium, non-communicable diseases are sweeping the entire globe. There is an increasing trend in developing countries, where the demographic and socio-economic transition imposes more constraints on dealing with the double burden of infectious and non-infectious diseases in a poor environment, characterized by ill-health systems. It is predicted that, by 2020, non-communicable diseases will cause seven out of every ten deaths in developing countries. Among non-communicable diseases, special attention is devoted to cardiovascular disease, diabetes, cancer and chronic pulmonary disease. The burden of these conditions affects countries worldwide but with a growing trend in developing countries. Preventative strategies must take into account the growing trend of risk factors correlated to these diseases. 

It is predicted that the prevalence of DM in adults of which type 2 DM is becoming prominent will increase in the next two decades and much of the increase will occur in developing countries where the majority of patients are aged between 45 and 64 years. It is projected that the latter will equal or even exceed the former in developing nations, thus culminating in a double burden as a result of the current trend of transition from communicable to non-communicable diseases.

The prevalence of type 2 diabetes rates continue to increase with increasing number of patients at risk of serious diabetes-related complications. Having type 2 diabetes increase the risk of a myocardial infarction two times and the risk of suffering a stroke two to four times. It is also a leading cause of blindness, limb amputation and kidney failure. Once regarded as a single disease entity, diabetes is now seen as heterogeneous group of diseases, characterized by a state of chronic hyperglycaemia, resulting from a diversity of aetiologies, environmental and genetic, acting jointly.

While the increase in prevalence is occurring in rural as well as urban areas, the urban areas demonstrate a faster increase. However disturbingly, in recent time an acceleration has been noted in rural areas which probably represents the adoption of unhealthy lifestyles in rural population.

The International Diabetes Federation (IDF) Diabetes Atlas states that in low- and middle-income countries, the number of people with diabetes in urban areas is 181 million, while 122...
million live in rural areas. The data from the ICMR study also shows that prevalence of diabetes in urban areas ranged from 10.9 to 14.2% while in rural areas the range was 3.0 to 8.3%. A rural-urban gradient has also been observed in a study from Tamil Nadu, where the prevalence of diabetes in peri-urban villages and cities in the state of Tamil Nadu reported as 9.2% and 16.4% respectively. Tamil Nadu and Maharashtra was 8.3%, 7.8% and 6.5% respectively. On the other hand, in the economically less advantaged state of Jharkhand, the prevalence was only 3.0%. This on looking at the rapid increase of cases of diabetes mellitus in urban area this study was planned to determine the prevalence of type II diabetes mellitus among adults of urban area in Bareilly.

MATERIALS AND METHODS

Present cross-sectional study was conducted in the Department of Community Medicine, RMC&H Bareilly among people residing in urban areas of Bareilly. Study Period was from November 2015 - October 2016. Ethical clearance was obtained from the institutional ethical committee for the present study.

Inclusion Criteria
- People aged 30-60 years.
- Residing in Bareilly from more than last 6 months.
- Those who give informed consent for the study.

Exclusion Criteria
- Aged below 30 year and more than 60 years.
- Residing in Bareilly from less than last 6 months.
- Those who did not give consent

Sample Size

Sample size for the proposed study was calculated according to India Health Administrator where prevalence of diabetes type 2 use in U.P. was given as 20.1%, therefore the adequate sample size calculated was approximately 450 assuming 10% non-response and considering 20% relative error. Sample size will be calculated with following assumptions p = prevalence =20.1%. \( q = 1- p = 79.9 \)
\( L (Relative \ error) = 20% \) of p
\( n= 4pq/L^2 \)
\( =397.5 \)
\( =398 \)

Taking non- response rate as 10%
Final sample size=10x/9
398 \( 10/9 = 442 \)

Sampling Technique

Multistage sampling technique was used for all the study units until the required sample size is attained.

Study Tool: pre-tested and pre-designed schedule.

Methodology

- Selection of study participants was done via multi stage sampling that was applied in urban areas of Bareilly.
- Out of 70 wards in the urban areas of Bareilly, 15 wards will be chosen via simple random sampling. Each ward is having average 900 houses and thus total houses in 15 wards were nearly 13,500 To attain the required sample size of 450 from these wards, 30 houses was chosen again via simple random sampling and from those houses selection of person aged 30 years and above was done, again via same technique till the required sample size was attained.
- If there were two or more person of the same age in the same house, then one person was selected again via same technique.
- After attaining the required sample size, fasting blood glucose level analysis of the study population was done with Glucometer.
- Fasting blood glucose analysis was done by taking early morning blood sample by finger pricking method and the study group was informed one day prior by making the house-to-house visit.

Data processing and Statistical analysis: The data obtained was compiled using an excel spread sheet. Statistical analysis was done using SPSS (Statistical Programming for Social Sciences) version 22.0. The data were summarized using percentages and frequency, Chi-square test and the differences was accepted significant at p value<.05.

RESULTS

Majority of the study subjects were seen in 30-40 years of age group (58%) with least (17.7%) being above 51 years. 95.3% study subjects were married while 4% were unmarried; majority of the study subjects were Hindu by religion; 39.6% belonged to general and 29.3% O.B.C. category while only 31.1% belonged to the S.C./S.T. category.

As far as the occupational classification is concerned only 11.1% being professional and 13.1% were in semi-profession, around one fourth (27.8%) of the study subjects belonged to the category of clerical/shop-owner/farmer while only (3.1%) were semi-skilled and more than a quarter (31.6%) being unemployed. Skilled workers were 13.1%. 67.1% study subjects belonged to the upper middle class with least being 1.6% in the upper lower class.
This chart shows the distribution of type 2 diabetes mellitus in study population in which 19.12% population is having type 2 DM.

In total sample only 23.6% population was having positive family history of type 2 diabetes mellitus.

Table 1 shows the distribution of tobacco, smoking and alcohol consumption among all the study population.

Among all study subjects 10.2% were chewing tobacco while 18% were smokers among these 13.7% were smoking cigarette while 4.3% were consuming beedi.

Among all the study subjects 12.9% were alcoholics among them most were occasional drinkers.

Figure 3 Depicts among the study population multiple answer are possible whose Fasting Blood Glucose >126mg/dl, where cardinal sign and symptoms noted was increase appetite 14.60%, increase thirst 11.1% and dry mouth 10.2% of population were having urination at night. Incidence of other symptoms were 3.1% numbness, increase hunger in 1.3% sweating 2.2% and moderate changes seen as night sweat 9.6%, weakness 7.6% and high RBS is 5.8%.

Table 2 depicts that majority of population 93.6% were aware about diabetes mellitus medication, in that 45.3% knew that only allopathic medicines are available for diabetes mellitus type 2 while and only 5.1 % knows about homeopathic medicine that can help in management of DM 2. 1.3% believes that all the three basic modalities like allopathic, ayurvedic and homeopathic can treat DM 2 still 1.3% were unaware about the treatment modality. 2.9% were unaware about the place of treatment while among the rest of study population 2.2% know about specialist D.M. clinic and rest believes that treatment is available at various place like medical college, district and private hospitals.

Table 4 depicts that 9.3% were using self -test method for investigation

Among the study population 72.20% subjects were non-vegetarian while only 27.8% subjects were taking vegetarian food.

Among study population of 450 subjects’ majority of population 76.20% were not taking outside food whereas 17.10% were taking lunch outside and 4.4% were taking dinner from outside source

Among study population majority of people were using refined oil in their daily routine of cooking oil while 33.3% were using mustard oil and only 6.2% were using olive oil.

Among study population 76.40% were taking added fat in their daily routine diet, while 23.60% were not taking added fat.

Among study population 58.20% were using ghee as extra added fat, 11.15 using butter and only 7.10% using chees in their routine diet.

Among study population only 17.3% were doing physical exercise and out of them all were doing morning walk were as 82.7% were not doing any physical activities.
The prevalence of Diabetes in my study was 19.1%. The prevalence in other studies from urban areas varies from 15% to 20.1%. In the present study the fasting blood glucose ≥126mg/dl was considered as criteria for diagnosis of diabetes. Similarly, studies done by Chow et al, Vijayakumar et al had taken the fasting blood glucose ≥126mg/dl as criteria for diagnosis of diabetes while V Mohan et al consider diabetes on self-reported basis while Jonas et al, defined diabetes as postprandial blood glucose concentration ≥200 mg/dL, glycosylated haemoglobin ≥6%, or self-reported medical diagnosis. Gupta et al has chosen Indian Diabetic Risk Score (IDRS) for seeing the prevalence of diabetes.

**DISCUSSION**

Through this study, an attempt has been made to look at some important aspects of prevalence of type 2 diabetes mellitus in the urban area of Bareilly which is geographically located at the western part of Uttar Pradesh State. The age of study population also differs. In this study, age ≥ 30 years was taken which was similar to studies done by Chow et al, Jonas et al and Kokiwar et al.

In studies done by Deo et al and Zaman et al, age group included were ≥20years. While study by Rajput et al and Vijayakumar et al included people aged ≥ 18 years, ≥ 15years was taken as study population by Mohan et al.

Present study showed that majority 60.22% of the participants were having education status of graduate while illiterates were only 8.66 % similarly Patel et al observes that majority of their patients had graduate education and illiterates formed a mere one percent in their study. While in contrast Rana HM et. Al. shows that majority of the patients were either educated upto primary or they were illiterate. Majority of population (69.76%) were of upper-middle class. Similarly, Robbins et al & Mainous et al also found that upper-middle class is more prominent.

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REFERENCES


