A Pharmacoepidemiological Study of Type-2 Diabetes Mellitus among Selected areas of Chitradurga

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ABSTRACT

Background: Globally Diabetes Mellitus (DM) is a major public health problem and is ever growing as an epidemic in both developed as well as developing nations. The prevalence of Type-2 Diabetes Mellitus in India is reported to be the highest in the world with more than 62 million cases in 2016. Recent surveys conducted indicate that diabetes now affects a staggering 25-40% of urban population and 10-20% of rural population in India. It is a major factor for future development of micro vascular and macro vascular complications. Still many patients especially rural peoples have poor knowledge about the conditions, often leads to the development of hidden diabetic cases and complications.
Objectives: To assess the prevalence, evaluate the pre-disposing factors of Type-2 DM, To assess the knowledge about Diabetes and to study the drug usage pattern in Type-2 Diabetic subjects.
Methodology: A Prospective observational study was carried out in selected areas of Chitradurga.
Results: Out of 304 subjects, 71 subjects (23.4%) were previously diagnosed Type-2 diabetes, in which 41(13.5%) are urban and (9.9%) are rural and urban subjects are having more knowledge regarding diabetes compared to rural subjects.
Conclusion: Total 304 subjects were included. Our study revealed 71 subjects with previously known cases. From our study 25 subjects were newly detected with diabetes, in this 15 subjects were from rural area and 10 subjects were from urban area. The study also revealed that combination therapy was used more than the mono therapy.

Key words: Prevalence, Risk factors, Knowledge assessment, Drug utility pattern

INTRODUCTION

Pharmacoepidemiology is a study of the utilization and effects of medicines in large numbers of people. The term pharmacoepidemiology obviously contains two components: "pharmaco" and "epidemiology." In order to better appreciate and understand what is and what is not included in this field, it is useful to compare its scope to that of other related fields. [1]

Diabetes mellitus (DM) is a metabolic disorder characterized by the abnormalities in the carbohydrate, fat, and protein metabolism. DM is aggravated by and associated with metabolic complications that can subsequently lead to premature death. [2]

Globally Diabetes Mellitus (DM) is a major public health problem and is ever growing as an epidemic in both developed as well as developing nations. The prevalence of Type- 2 Diabetes Mellitus in India is reported to be the highest in the world with more than 62 million cases in 2016. Recent surveys conducted indicate that diabetes now affects a staggering 25-40% of urban population and 10-20% of rural population in India. [3]

The International Diabetes Federation estimates that the total number of diabetic subjects is to be around 40.9 million in India. Out of 103 diabetic patients consented and participated in the study , 58 (56.31%) men and 45 (43.69%) women and 47 (45.63%) of the respondents were of the age between 45 – 55 years, followed by 33 (32.03%) in the age group of 55 – 65 years, 15 (14.57%) in the age group of 35 – 45 years and 8 (7.77%) aged above 65 years. According to the study 68 (66.01%) belonged to the higher socio-economic class, 27 (26.21%) to the middle class and 8 (7.77%) belonged to the lower socioeconomic class. [4]

The studies show that the urban people were having more knowledge about diabetes comparing to rural people. Diabetes mellitus along with its complications contribute to a significant amount of burden on the society. [5]

Awareness of the risk factors is important for the prevention to diabetic complications. The knowledge of causative factors for diabetes such as obesity, decreased physical activity, consuming sweets, drinking alcohol, smoking, high blood pressure and other high calorie or junk foods, are found to be very poor among the public. The lack of awareness of these risk factors can lead to huge complications such as blindness, heart failure, and renal failure among patients with diabetes.

The review of awareness, co-morbidities, and quality of life of diabetes patients in India shows that diabetes patients have lack of awareness about diabetes risk factors. Lack of awareness about risk factors leads to the complications such as micro vascular and macro vascular co-morbidities among the diabetes patients. [6]

For the management of diabetes mellitus combination therapy (56.5%) is used commonly in the current study area setting and is more preferred in order to control the FBS of the patients, combination of biguanides and sulfonylureas were most frequently used combination and is most effective .

This Pharmacoepidemiological study is carrying out to assess the awareness and knowledge about Type-2 Diabetes Mellitus in the specific population of selected rural and urban areas. [7]

MATERIALS AND METHODS
Study design : It was a prospective observational study.

Study site: The study was carried out in selected residential urban and rural areas in Chitradurga

Study period: The study was conducted over a period of six months from 2018 to 2019.

Study subjects: All subjects who were staying in urban and rural areas during the study period were enrolled into study. Subjects who met the following criteria were enrolled.

Inclusion criteria:
- Subjects of both genders.
- Subjects of age group between 35-64
- Subjects with Co-morbid condition
- Subjects with or without complication of DM.

Exclusion criteria:
- Subjects who are having gestational DM
- Subjects who are having DM with TB

Ethical approval:
This study was approved by the "Institutional Ethical Committee" of The S.J.M. College Of Pharmacy, Chitradurga. SJMCP/IEC/2018-19/02

Sources of data:
- The relevant data (Demographic details, occupation, literacy, diet, life style modifications, family history of the subject, treatment chart) was collected by using self designed data collection form
- Direct interaction with the subject

Study procedure:
- This is a community based prospective observational study carried out for a period of six months after obtaining

approval from institutional ethical committee.

- Here selection of subject will be based on multi-stage sampling method, in this method Chitradurga Thaluk will be divided into 6 parts. Odd numbers are urban areas and even numbers are rural areas.
- Informed consent form provided to the subject in their local language (Kannada) and explain verbally. For collection of data, we provided a self designed data collection form which includes demographic details, occupation, literacy.
- Study includes self designed and validated questionnaire about the knowledge and risk factors, which will be filled by the study subjects during one to one interaction at their residence.
- The test will be conducted to know about their baseline knowledge and answers will be collected then the subjects are educated regarding diabetes, and its signs and symptoms, Complications.

- Evaluation of questionnaire will be done by giving marks. Each corrected answers will be awarded by one mark and wrong answers it will be zero.

Statistical analysis:

- The data were entered in Microsoft excel and data were analyzed by SPSS software version 19.
- Categorical data were presented as frequency, percentage and quantitative data were analyzed by descriptive method.

RESULTS

A total of 304 subjects were included, in which 152(50%), were from urban households and 152(50%), were from rural households.

1) Distribution of Diabetes status according to their Residence

The DM status of the subjects in urban and rural were as follows:41 (57.7%) and 30(42.3%) belongs to urban and rural respectively.
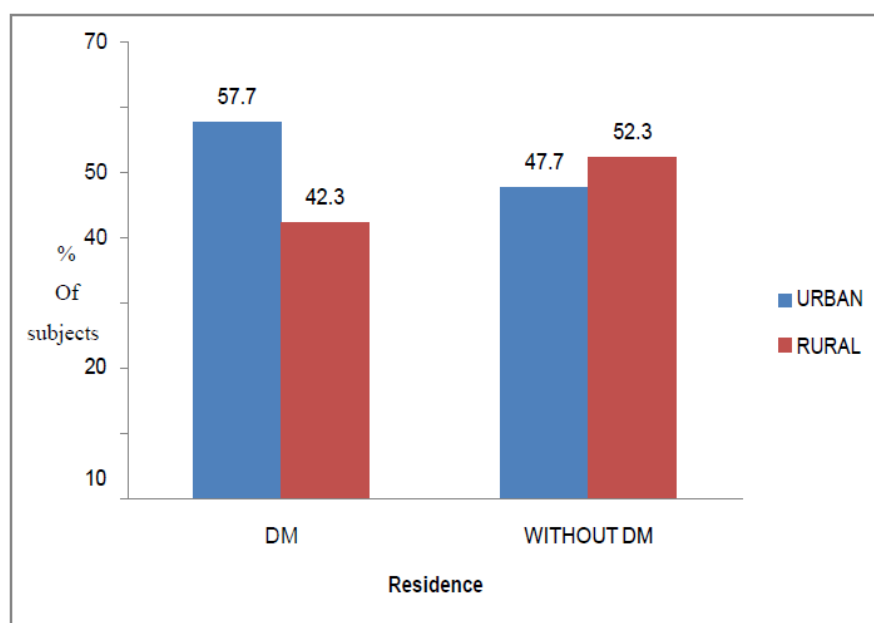

Fig 1: DM status of subjects in urban and rural

2) Distribution of DM status according to their gender

The gender wise distribution of DM subjects in the urban and rural areas were as follows: 24(58.5%) males, 17(41.5%) females in the urban areas and 17(56.7%) males, 13(43.3%)females in the rural areas
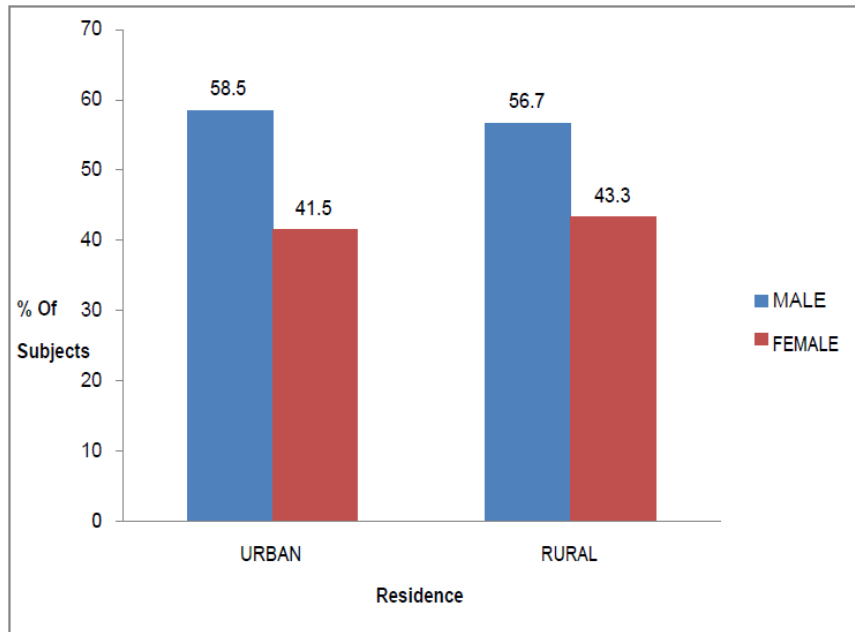
Fig 2: DM status among both genders.

3) Distribution of subjects according to their knowledge

The scoring of knowledge status among urban subjects is divided in to 4 categories i.e. poor knowledge, below average, average, above average. From the present study 99(65.1%), 24(15.8),22(14.5%), followed by 7(4.6%) with average, above average, below average, poor and in rural subjects 59(38.8%),56(36.8%),33(21.7%),4(2.7%) with below average, poor, average, above average.
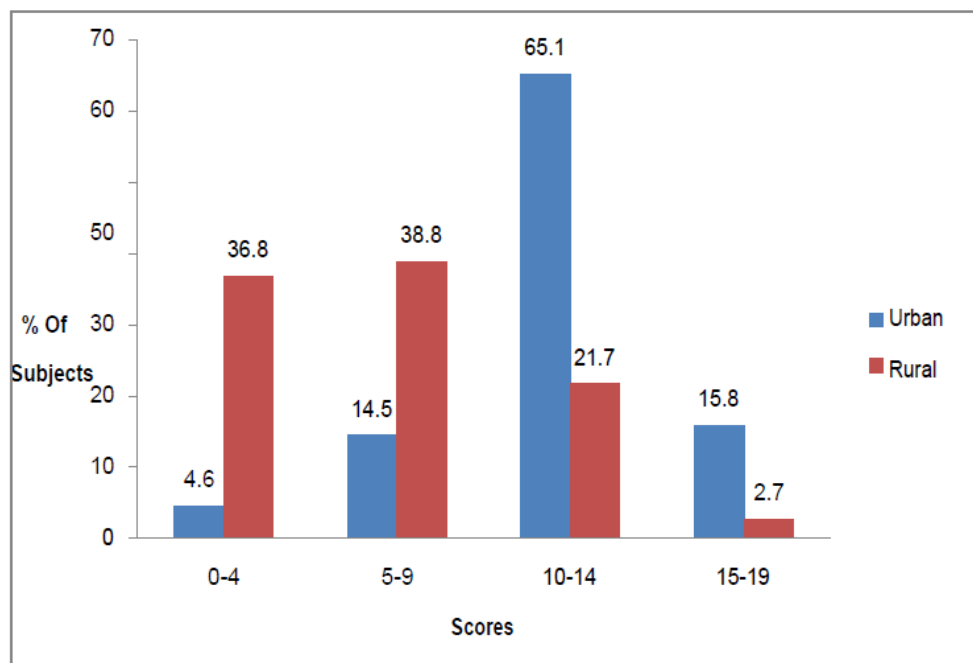

Fig 3: Knowledge status of subjects in rural and urban areas

4) Distribution of Subjects Based on Risk factors

Out of 304 subjects 71(23.3%) study participants are diagnosed with type2 Diabetes Mellitus. The proportion of people diagnosed with diabetes was estimated high with increasing BMI

(63.4%), Physical inactivity (64.8%),family history (66.2%),high BP(67.6%) and high cholesterol level(60.6%) which is shown below(Table1)

<div align="center">Table 1:Distribution of subjects based on Riskfactors</div>

Variables	Subject without Diabetes (in %) n=233	Subject with Diabetes (in %) n=71
BMI>30kg/m^2(Obese) Yes No	31.8 68.2	63.4 36.6
Physically active Yes No	75.1 24.9	35.2 64.8
Family history Yes No	17.1 82.9	66.2 33.8
High blood pressure Yes No	30.9 69.1	67.6 32.4
Habbit of smoking and drinking alcohol Yes No	30.9 69.1	67.6 32.4
High cholesterol level Yes No	30 70	60.6 39.4

5) Distribution according to major and minor symptoms

Response given by the subjects for the question: "Do you ever experience any of the following minor (Generalized weakness, Tiredness, Fatigue, Dizziness) and major symptoms (Polyuria, Polydipsia, Polyphagia, Poor wound healing, Blurred vision) as follows: 60(84.5%), 11(15.5%) and none belongs to major, minor and no complaints in DM subjects respectively. And 101(43.3%), 68(29.2%), 64(27.5%) with major, minor, no complaints respectively.
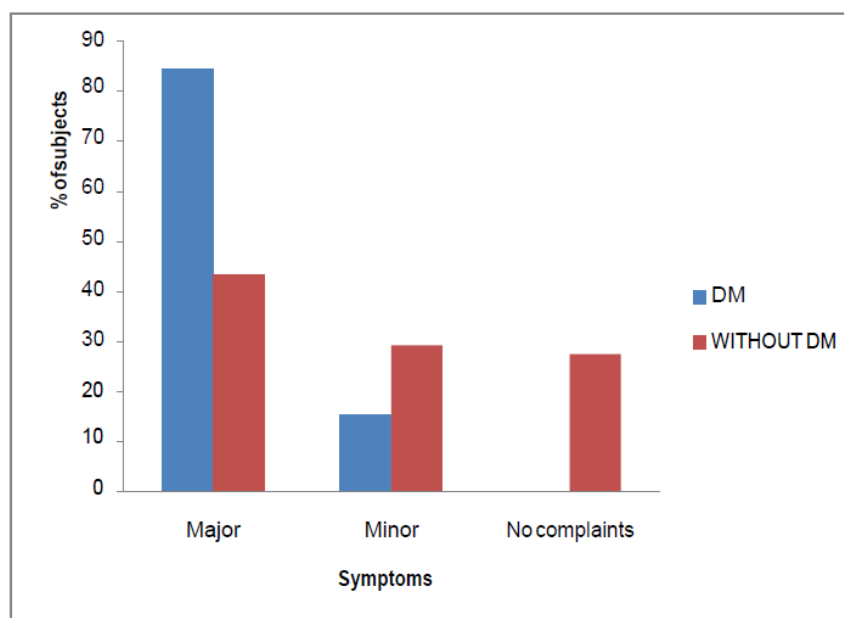

Fig 4: Details of response given by the subjects for the question "Do you ever experience any of the following minor and major symptoms

6) Distribution of subjects according to their medication

The comparison of drug therapy in DM subjects enrolled in the study were as follows: Dual therapy 36(50.7%), Mono therapy 28(39.4%),Triple therapy 7(9.9%).
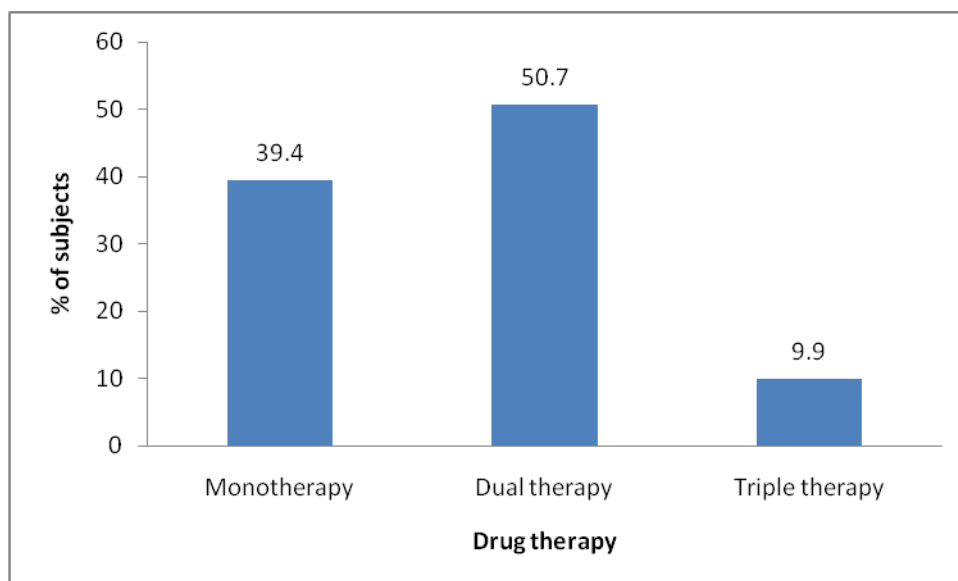
Fig 5: Comparison of drug therapy in DM subject

DISCUSSION

In our study a total of 304 subjects were included, for our convenience we divided study subjects into 6 groups based on multi stage sampling method in which 152(50%), are from urban households and 152(50%), are from rural households. Selection of sample size was random.

In the present study prevalence of DM, in both urban and rural subjects were found to be 41(57.7%) and 30(42.3%) respectively. Our study findings were very similar to the study conducted by Aung W *et al.,* [8]

The categorization of age group in our study was similar to study conducted by Rameswarapu R *et al.,* in interval of 10 years from 35-64. [10]

The present study has also shown that male counter parts (57.8%) were having high prevalence of DM which are in line with a study conducted by Sridhar GR *et al.* [11]

As it is a known fact that middle aged group is more suspected to DM, with number of study supporting us we consider the study conducted by Rameswarapu R *et al.* [10]

The scoring pattern regarding the knowledge between the urban and rural was found to be huge difference i.e., (80.92%) in former and (24.34%) in later, which was identical to research carried out by Sabri AA *et al.* [5]

Among 71 subjects who are diagnosed with, the potential risk factor was found to be in physical activity (64.8%) which was also underline by the study conducted by Barik A *et al.* [9]

Here we have considered major attributable risk factors among Non DM (233) subjects like obesity (31.8%), history of smoking and alcohol consumption (44.2%), high blood pressure (30.9%), family history (17.1%) and high cholesterol level (30%) which is found to be obverse with the study conducted by Megerssa YC *et al.* [12]

Out of 304 subjects (71 DM cases and 233 Non DM cases) in which 134(44.1%) subjects had checked their blood glucose level recently, out of which 71 were already known cases of DM(checked recently). In 233 Non DM subjects 63(27%) had checked recently and 170(73%) were not checked.

In our research, we have categorized risk factors as minor and major symptoms. The findings of our study shown that out of 304 subjects, 161(53%) had major symptoms, 79(26%) had minor symptoms and 64(21%) had No complaints. In 161 subjects with major symptoms, 71 were already Non DM cases remaining 101 subjects were asked to consult the physician/ doctor for further evaluation.

The major finding in this study is 25(10.7%) newly detected DM which showed. The prevalence of newly detected DM in this study was found to be in contrary with the study carried out by Ojewale *et al.*

When we analysed the prescription pattern among the 71 diagnosed cases, we found that monotherapy 28(39.4%), dual therapy 36(50.7%) and triple therapy 7(9.9%), which is very similar to the conducted by Latha S P *et al.,* [7]

CONCLUSION

According to the analyzed results and from view of literature, the conclusions made are;

* The prevalence of Diabetic patient at the time of study, it was found that total (23.3%) of the study subjects.
* Our study has revealed that Type-2 DM is more prevalent in urban areas than rural areas.
* Major finding of our study is based on signs and symptoms it was found that majority of them have neglected the disease which is leading to complications.
* Among the middle aged DM patients (45-54) obesity was found to be associated risk factor.
* Risk factors like family history, high cholesterol, high Blood pressure was found to be having significant association between diagnosed DM patients.
* Regarding prescription pattern of our study subjects majority of them were on dual therapy.
* Apart from these, the important and major finding of the present study through questionnaire and interaction, based on major symptoms we could able to detect hidden cases of DM(25 cases) among the study population.

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How to cite this article: Archa PR, Thomas D, Yogananda R et.al. A pharmacoepidemiological study of type-2 diabetes mellitus among selected areas of Chitradurga. International Journal of Science & Healthcare Research. 2020; 5(2): 175-182.

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