

ASSESSMENT OF PRESCRIPTION PATTERN AND DETERMINANTS OF OBESITY IN TYPE II DIABETES MELLITUS PATIENTS

Abhi Raj, *Nataraj G. R., Bharathi D. R. and Abubaker Siddiq

Dept. of Pharmacology, SJM College of Pharmacy, Chitradurga-577502, Karnataka, India.

Received on: 30/06/2021

Revised on: 20/07/2021

Accepted on: 10/08/2021

*Corresponding Author

Nataraj G. R.

Dept. of Pharmacology, SJM

College of Pharmacy,

Chitradurga-577502,

Karnataka, India.

ABSTRACT

Background: Obesity in Type II DM may be a common problem within the global scenario. It's day by day increasing. Pathogenesis of Obesity in Type II DM is affected mainly by Physical Inactivity, Food Intake which plays a key role. "Diabesity" may be a new term which refers to diabetes occurring within the context of obesity. **Methods:** A prospective observational study was carried out in the General Medicine Department of Basaveshwara Medical College Hospital and Research Centre, Chitradurga for a period of 10 months. A total of 111 patients with Obesity in Type II DM out of 160 Type II DM cases were enrolled. **Results:** The prevalence of obesity in Type II Diabetes mellitus subjects is 69.4%. Most commonly prescribed drugs for obesity in Type II DM is Metformin which is Monotherapy. The major risk factors responsible for the occurrence of obesity are Physical inactivity and Food Intake. **Conclusions:** The study exhibits a higher level on the prevalence of Obesity in Type II DM subjects. Majority of the population is obesity in Type II DM, so the associated complication of obesity in Type II DM will be more. Much of the population is not working so this will also be one of the reasons for causing the obesity as it is lack of Physical inactivity and Food Intake.

KEYWORDS: Type II Diabetes Mellitus, Obesity, Diabesity, Physical inactivity, Food intake.

1. INTRODUCTION

Obesity outcomes from an imbalance between power output and intake. obesity is that the result of diet modifications, a lifestyle that accompanies monetary development, urbanization, and globalization. Food program, vitamins, and ever-changing lifestyle are the foremost variety of the essential factors main to obesity in developing additionally to evolved countries.^[1] The prevalence of obesity has multiplied considerably in India over a previous couple of decades. a few third of the adult population in India is presently calculable to be overweight or obese.^[2]

Obesity is traditionally defined as the presence of excessive body fat, but the pattern of fat distribution is important in terms of DM risk and many other metabolic abnormalities included in the metabolic syndrome. Men are more likely to have abdominal or upper-body obesity (android obesity, first described by Vague in 1956), whereas women are more likely to have a gluteofemoral or lower-body pattern of fat distribution (gynoid obesity). Although most epidemiological studies have only used BMI as a predictor of DM risk, there are now numerous prospective longitudinal studies showing that a pattern of upper-body fat distribution is independently associated with a higher risk of developing DM. Central obesity is estimated by the waist-to-hip ratio (WHR) as

well as by the waist circumference (WC). Epidemiological studies have confirmed that subjects with a high WHR (104 cm for men and >88 cm for women) have an increased risk of developing DM.^[3]

Obesity is generally considered to be a strong risk factor for the development of Type II diabetes mellitus in the future. Thus, the main aim of this study is to evaluate the trend of overweight and obesity among patients with Type II diabetes mellitus.

Recent studies reported that an increased prevalence of Type II diabetes mellitus in obese children and adolescents, especially in specific ethnic groups.^[4] A large number of studies have shown that a rise within the prevalence of obesity is followed by an identical rise within the prevalence of Type II DM and that obesity is responsible for more than 80% of all cases of Type II DM. Identification of risk factors associated with and prevention of Type II DM is, therefore, a major priority in healthcare planning in many countries.^[5]

India is undergoing a speedy epidemiologic transition with augmented urbanization and socio-economic development that has resulted in an exceedingly dramatic modification in style, consisting of physical inactivity, a diet made in fat, sugar, and salt in addition to a high level of mental stress. This has led to an increased incidence of

lifestyle diseases like hypertension, Type II Diabetes Mellitus, dyslipidemia, obesity, and ischemic heart diseases. Obesity also contributes to these diseases.^[6]

The present study is aimed to assess the association of obesity in type 2 diabetes patients and evaluate the prescription pattern and providing awareness in clinical practice and public health.

2. MATERIALS AND METHODS

Study design: A prospective observational study.

Study site: The study has been conducted in General Medicine Department, Basaveshwara Medical College Hospital and Research Centre, Chitradurga.

Study period: The study has been conducted for a period of 10 months.

Inclusion Criteria

- Both inpatients and out patients.
- Both genders.
- Patients of age group between 40-80 years of age.
- Patients having Type-II Diabetes Mellitus.

Exclusion Criteria

- Bed ridden.
- Patients who are disoriented.

Sources of data

Demographics, medication and medical history will be collected from the patient profile form and their prescriptions.

Ethical approval

- The study was approved by the Institutional Ethical Committee of SJM College of Pharmacy, Chitradurga.
- IEC approval on Ref:No.SJMCP/PG/Ph COL/02/2020-21

Study procedure: A Ten month hospital based prospective observational study was conducted on Obesity in Type II Diabetes Mellitus who were admitted in Basaveshwara medical college hospital and research centre, Chitradurga. The study was started after the approval from the ethical committee. The details about the study was explained to the patients and those patients who are willing to sign the informed consent form were only included in the study. The medical records of such patients were reviewed. The patient's demographic details, clinical details, drug therapy, and data like drug name, dosage, route of administration were collected in data collection form. The collected data were assessed and analyzed by using statistical methods.

Statistical Analysis

The data were entered in Microsoft Excel sheets and analysis has been done by Social Programme Scientific Software (SPSS) version 24. Categorical data was analyzed by Descriptive methods (Mean), Chi-square, Point prevalence assessment.

3. RESULTS AND DISCUSSION

3.1 Distribution of Patients according to BMI

111 patients were enrolled in the study in that 45.4% were found to be obesity class I, 22.6% were found to be obesity class II, and 32.4% with obesity class III. The details graphically illustrated in figure.1.

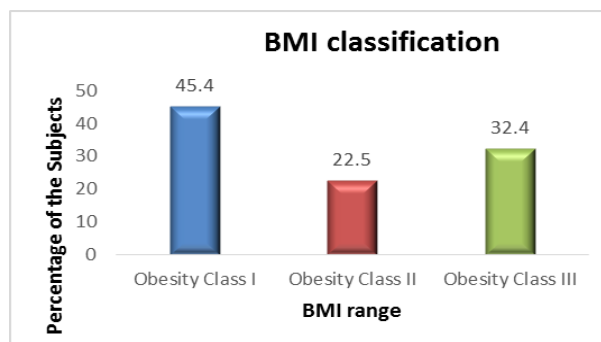


Figure 1: Distribution of patients according to BMI classification.

3.2 Assessment of prevalence of obesity in Type II diabetes mellitus patients:

Prevalence =

$$\frac{\text{Number of population with disease at a given time}}{\text{Total number of population at a given time}} \times 100$$

$$= \frac{111}{160} \times 100$$

$$= 69.4 \%$$

The prevalence of obesity in Type II Diabetes mellitus subjects is 69.4% that is 1 in every ≈2 members (with diabetes) will be affected with obesity.

3.3 Risk factor assessment

Q1. Response of the Patient: "How many times do you take your meal in a day?"

A total of 111 study subjects who were associated with Obesity in Type II DM, 37.8% have taken meals 3 times daily, 36% took meals 4 times daily, 18% took meals 2 times daily followed by 8.2% took meals more than 4 times daily. The result is graphically represented in figure no 2.



Figure 2: Response of the Patient "How many times do you take your meal in a day?"

Q2. Response of the Patient: “Do you perform exercise?”

In this study, A total of 111 subjects who were associated with obesity in Type II DM, 54.9% have answered **No**, 33.3% have given the answer **Yes**, followed by 11.8% have answered **Sometimes**. The result is graphically represented in figure no 3.

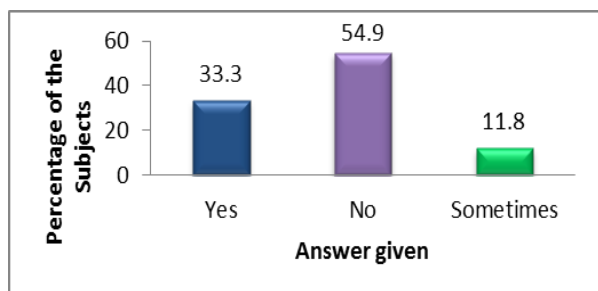


Figure 3: Response of the Patient “Do you perform exercise?”.

3.4 Medication prescribed

Out of 111 patients, Metformin (25.7%) and thiazolidinediones (8.7%) were prescribed as monotherapy, and Glimepiride+metformin(10.6%) was prescribed for dual therapy, and 9.5% were prescribed with insulin, and 10.5% patients were prescribed with injection actrapid. Results are graphically represented in figure no 4

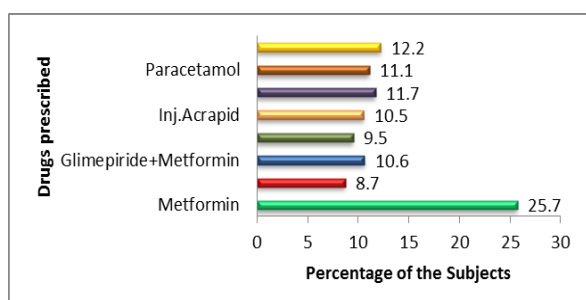


Figure 4: Distribution of patients according to Prescription Pattern.

DISCUSSION

Obesity is a major independent and modifiable risk factor for T2DM and many epidemiological studies have suggested a progressive increase in the prevalence of Type II DM with obesity.^[7] **Basukala A *et al.***, (2014) conducted a cross-sectional study on an assessment of Prevalence of overweight and obesity among patients with type 2 diabetes mellitus in Kathmandu and founded that a total of 160 patients were enrolled in which obesity was found to be 51.9%. In their study prevalence of obesity was found to be high in diabetic population. Similarly, obesity was found to be more prevalent in female subjects than their male counterparts, with 5.5% males and 25.7% females being obese.^[8]

According to this study, the risk factors for obesity is found to be Physical inactivity, Food Intake. **Tatiana Gurevich-Panigrahi *et al.***, (2009) conducted a cross-

sectional study regarding Obesity, Pathophysiology and Clinical Management, and found that major Risk factors for development of obesity are food intake and Physical Inactivity. An increase in sedentary behavior, and a decrease in activity of daily living and employment physical activity promotes obesity.^[9]

In this study, Prescription pattern of Type II DM, monotherapy is mostly preferred than dual & triple therapies to treat the condition. The most commonly prescribed drugs are metformin (25.7%) and Thiazolidinediones (8.7%). In dual therapy the commonly prescribed drugs are Glimepiride+Metformin (10.6%) and drugs were given by injection are injection actrapid (10.5%) and insulin (9.5%).

Lalit Kumar *et al.*, (2018) conducted a cross-sectional study regarding the Assessment of the prescription pattern of anti-diabetic drugs in Type-II diabetes mellitus patients, and found that Oral anti-diabetic drugs are on top with Metformin (78.12%) is the drug of choice in prescribing pattern and the use of insulin preparations in the treatment of Type 2 DM is increasing continuously.^[10]

5. CONCLUSIONS

According to the analyzed results and from review of literature, the conclusions made are: Among them the prevalence obesity in Type II Diabetes mellitus subjects is 69.4%. Major risk factors for development of obesity in Type II Diabetes mellitus patients are food intake and physical Inactivity. Most commonly Prescribed Drugs for Obesity in Type II Diabetes mellitus is Metformin which is Monotherapy.

6. ACKNOWLEDGEMENTS

First and foremost, we would like to thank God Almighty for giving us the courage, knowledge, ability to undertake this research and complete it satisfactorily. I express my heartfelt gratitude and respectful thanks to Dr. Bharathi D R, Dr. Nataraj G.R for their guidance.

6. REFERENCES

1. Gurevich-Panigrahi T, Panigrahi S, Wiechec E, Los M. Obesity: Pathophysiology and Clinical Management. Current Medicinal chemistry, 2009; 16(4): 506–21.
2. Babu GR, Murthy G, Ana Y, Patel P, R D, Neelon SEB, *et al.* Association of obesity with hypertension and type 2 diabetes mellitus in India: A meta-analysis of observational studies. World Journal of Diabetes, 2018; 9(1): 40–52.
3. Ioannidis I. The Road from Obesity to Type IIDiabetes. Angiology, 2008; 59(2): 39-43.
4. Wabitsch M, Hauner H, Hertrampf M, Mucbe R, Hay B, Mayer H, *et al.* Type II diabetes mellitus and impaired glucose regulation in Caucasian children and adolescents with obesity living in Germany. International Journal of Obesity, 2004; (2): 307–13.

5. Tentolouris N, Andrianakos A, Karanikolas G, Karamitsos D, Trontzas P, Krachtis P, *et al.* Type II diabetes mellitus is associated with obesity, smoking and low socioeconomic status in large and representative samples of rural, urban, and suburban adult Greek populations. *HORMONES*, 2012; 11(4): 458–67.
6. Akholkar P, Gandhi A. Prevalence of obesity in diabetic and non-diabetic population. *International Journal of Research in Medical Sciences*, 2015; 2114–7.
7. Leitner DR, Frühbeck G, Yumuk V, Schindler K, Micic D, Woodward E *et al.*, Obesity and Type 2 Diabetes: Two Diseases with a Need for Combined Treatment Strategies - EASO Can Lead the Way. *Obesity Facts*, 2017; 10(5): 483–92.
8. Basukala A, Sharma M, Pandeya A. Prevalence of overweight and obesity among patients with type 2 diabetes mellitus in Kathmandu. *Sky Journal of Biochemistry Research*, 2014; 3(7): 60–64.
9. Kumar L, Gupta SK, Assessment of prescription pattern of anti-diabetic drugs in Type II diabetes mellitus patients, Cross sectional study, *The pharma innovation journal*, 2018; 7(5): 392-394
10. Gurevich-Panigrahi T, Panigrahi S, Wiechec E, Los M. Obesity: Pathophysiology and Clinical Management. *Current Medicinal Chemistry*, 2009; 16(4): 506–21.
11. Daousi, C. Prevalence of obesity in type 2 diabetes in secondary care: association with cardiovascular risk factors. *Postgraduate Medical Journal*, 2006; 82(966): 280-284.
12. Ioannidis I. The Road from Obesity to Type 2 Diabetes. *Angiology*, 2008; 59(2): 39-43.
13. Wabitsch M, Hauner H, Hertrampf M, Muche R, Hay B, Mayer H, *et al.*, Type II diabetes.